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Original Communications.

VACCINATION, ITS TRUE AND SPURIOUS TYPES; WITH REMARKS ON ITS PROTECTIVE INFLUENCE IN THE RECENT EPIDEMIC OF SMALLPOX.

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AND
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The wide-spread prevalence of smallpox throughout the United States has occasioned the publication in medical journals of numerous articles on the subject of vaccination. The theme is of such living and momentous interest that it is hoped that its consideration under the above title will not prove "stale, flat, and unprofitable." The purpose of this article shall be to describe genuine and spurious vaccination, to call attention to the distinguishing features of these two types, and in addition to show what vaccination has accomplished during the recent epidemic.

The following may be regarded as the typical course of the vaccine disease. On the third or fourth day after vaccination a very faint redness may be seen at the point of inoculation. This redness gradually increases, while at the same time a distinct reddish papule is formed, which varies in size according to the extent of the abrasion. On the fifth day the lesion begins to assume a vesicular condition. This is usually seen

first at the margin of the site of inoculation. The vesicle gradually increases in size, the contained lymph being at first thin and perfectly transparent. On the eighth day the vesicle reaches its greatest perfection. It is then considerably elevated above the level of the skin and presents a pearly or yellowish appearance. When examined closely it will be found to have, even at an early stage of its development, an umbilicated form similar to that seen in vesicles of variola. About this time there appears around the vesicle an inflammatory circle which is called the areola. During the ninth or tenth day the redness increases, the inflamed skin becomes tense and painful, and streaks of redness often extend a considerable distance from the lesion. The neighboring lymphatic glands become enlarged and painful.

At the same time mild constitutional symptoms appear, slight rigors, a rise of temperature of one or two degrees, malaise, anorexia, disturbed sleep, etc. Many children, however, pass through the regular course of vaccinia without any apparent systemic disturbance. Occasionally in severe primary vaccinations a macular eruption, designated as *roseola vaccinosa,* and bearing considerable resemblance to measles, may appear.

On the eleventh or twelfth day the pock begins to fade, its contents become opaque, and desiccation appears in the center. By the fifteenth day desiccation is usually completed, although the crust does not fall off until the end of the third or frequently the fourth week. The completed crust is of a mahogany color, rough on its exterior, thin at its center and periphery, with a thick circular ridge between. The scar is at first red, but in the course of a few months becomes paler than the surrounding skin. It is pitted or foveolated, and not infrequently presents radiating bands or striæ of cicatricial tissue.

As the analogy between cowpox and smallpox is in most respects very close, and as variola frequently differs in the duration and severity of its local manifestations, so also it must not be expected that the local lesions of vaccinia will invariably follow the typical course just described. In some cases the disease is undoubtedly shorter and milder, while in others it is longer and more severe. No deviation, however, should occur in the evolution of the pock; that is to say, it should pass through the stages of papulation, vesiculation, and pustulation. It has been known to appear as late as one month after the inoculation was done, and then develop and run regularly through its course. Likewise, the constitutional symptoms are not uniform; they may be mild or entirely absent.

There are certain false vaccine conditions which claim attention. The raspberry excrescence, when seen, usually appears from three to seven days after vaccination, beginning as a red elevation at the site of inoculation, quite similar in appearance to the papule of true vaccinia, but instead of advancing to the vesicular stage, it remains hard, dense, bright red in color and nodular in form, looking not unlike a small nevus. It is very persistent, remaining usually weeks or months, and is not followed by a scar. This spurious excrescence is more frequently seen since the general employment of bovine lymph. Experience has proven that this raspberry form of vaccine disease is utterly devoid of protective power against either variola or vaccinia.

The query is often asked, what constitutes a successful revaccination? This is a question about which there is considerable diversity of opinion. Many believe that, unless the vesicle and areola observe the course of true vaccinia, the effect is merely local and devoid of prophylactic power. But it is evident on a little reflection that there is no more reason why we should expect the vaccine disease produced by revaccination to be typical than that we should expect smallpox, after vaccination, to run the typical course of variola vera. If there be modified smallpox or *varioloid* after vaccination, so should there be modified vaccinia or *vaccinoid.* From these premises the conclusion may be deduced that, as varioloid confers immunity against a recurrence of smallpox, so also does the modified form of vaccinia resulting from revaccination remove from the individual whatever susceptibility to the disease may be present.

It is frequently a matter of great difficulty in revaccinations to distinguish between irritative local reactions and lesions which result from the specific actions of the vaccine principle. It is interesting to contrast the opinions of writers on this phase of the subject.

Bousquet, quoted by Trousseau, says: "True cowpox hardly begins to show itself

at the end of the third day, but the false is much earlier, and may be seen from the first to the second day after the introduction of the virus, a circumstance which from the first constitutes a distinction between the two affections. False cowpox sometimes shows itself as a small pimple, which goes on increasing until the fourth or fifth day. On the sixth or seventh day its progress becomes arrested, it grows pale, and dries up. At other times it advances further, always preserving in its rapid development a conical or globular shape, which I look upon as an unerring sign of false, as the flattening and central depression of the pock are signs specifically characteristic of the true." "The false pock is sometimes red and sometimes yellowish. It never assumes the brilliant silvery lustre which distinguishes the prophylactic cowpock."

Hervieux, in 1893, read before the Paris Academy of Medicine an article on *vaccinoid*, in which much wider limits are given to the modified vaccine lesion. He says: "There are three types of vaccinoid, dependent upon the extent to which the weakening of the immunity has advanced:

"1. At the point of inoculation there appears a pink papule hardly at all elevated above the surrounding integument and without any areola; it disappears at the end of a few days, leaving no scar.

"2. There forms an acuminate papule, larger than that seen in the first type of vaccinoid, redder, more distinctly visible, surmounted by a little vesicle at its point, surrounded by a faint areola, and leaving after desiccation a little scab, which falls soon without the formation of a cicatrix.

"3. The vesicle is more distinct, the areola is more pronounced, the scab is larger and more adherent, and leaves behind it a cicatrix, which, however, disappears in the course of time. These evidences of vaccinal action are usually accompanied by considerable itching, but there is no fever and the process confers immunity." Hervieux claims that vaccinoid transmits by inoculation true vaccinia.

The writers would be extremely reluctant to subscribe to the views just enunciated. It is to our minds dangerous to the cause of vaccination to recognize in "a pink papule hardly at all elevated" evidence of specific vaccinal reaction. We are indeed not convinced that any of the types of vaccinoid described by Hervieux represent true manifestations of vaccinia. We are willing to concede, however, that the subject admits of no dogmatism. That genuine vaccinia is frequently not followed by scars is a statement which we would urge to be regarded with a considerable degree of skepticism, although we are not in a position to absolutely deny it.

We are convinced of the fact that many local reactions similar to those described by Hervieux are not genuine "takes." Such lesions not uncommonly show an unusual degree of inflammatory action even as early as the second or third day. Upon this area there frequently springs up with surprising rapidity a more or less conical or globular blister, instead of a typical vesicle. This epidermal elevation is thin-roofed, and ruptures readily, giving exit to a thin, irritating fluid, which speedily dries in the form of a friable yellowish crust, the exudation continuing to ooze out at the margins. After shedding of the crust there is left a faint scar, which is devoid of the characteristics of a true vaccine cicatrix. An observation which militates strongly against even the partially specific character of these lesions is that they may develop in individuals who are known to be immune against smallpox. Recently such a reaction was observed in a physician who has been steadily exposed to smallpox for a long time.

Moreover, *we have on several occasions observed smallpox develop in individuals who have had local reactions which were regarded by themselves and in several instances by their physicians as genuine takes.* We recall the case of a stout woman of thirty years, who had been vaccinated without result some years previously, and who was vaccinated one month before admission to the Municipal Hospital. She informed us that there had been some local reaction, and the physician in attendance had been for a time in doubt as to whether there had been a successful 'take" or not, finally deciding in the negative. The patient developed confluent smallpox and died in ten days. From an examination of the arm on admission we were convinced that the result had been spurious.

Quite recently a trained nurse, who had been in attendance upon a private patient suffering from smallpox, was brought into the hospital with a mild attack of variola. She presented upon her arm a poor mark from a vaccination in childhood. She had

been revaccinated on December 19 with a dry point. According to her description, a vesicle formed in from two to four days. This itched considerably, and later became surrounded with an areola the size of a silver half-dollar. The axillary glands were distinctly tender. The crust remained upon the sore for three weeks. The nurse and the physician in attendance regarded the result as a successful vaccination. The patient exhibited a reddish-brown stain at the site of vaccination, but no true scar.

A young man aged twenty-five was vaccinated for the first time about Christmas of 1901. He stated that the vaccination was inflammatory from the outset. A vesicle was formed, and later an areola and axillary tenderness developed. A reddish crust remained upon the vaccine site for a period of three weeks. The physician in attendance regarded the sore as a genuine "take." The patient was admitted to the hospital on February 6, 1902, about six weeks later, with a malignant type of confluent smallpox, to which he rapidly succumbed. Examination of the arm of this patient upon admission to the hospital showed a brownish-red stain, but no scar whatsoever. In this case, in which the vaccination was a primary one, its spurious character was evidenced not only by the atypical development of the vesicle and the absence of a characteristic resulting scar, but by its signal failure to protect against smallpox.

We have from time to time received in the hospital patients with smallpox who had been recently (*i. e.*, within a few months) unsuccessfully vaccinated. Perhaps some twenty or twenty-five such patients were admitted. In each case inquiry was made as to the kind of vaccine material employed. It was found that dry points had been used in the vast majority of patients. In only a few had the glycerinated lymph been employed. This observation is confirmatory of our experience that glycerinated lymph is surer in its effect than dry points.

No patient was received in the hospital who had been twice recently and unsuccessfully vaccinated.

It is to our minds impossible for a person recently successfully vaccinated to contract a severe smallpox. In one or two instances, some years ago, smallpox was observed in children vaccinated within six months, but these attacks were utterly insignificant and devoid of all danger; and these were the only such cases in many thousands of patients with smallpox. Of the 1700 patients treated since January 1, 1901, at the Municipal Hospital, not one has been received who has been successfully vaccinated within a period of four years. The most recent vaccination in a smallpox patient was in a young man, said to have been vaccinated four years before admission, who had well-marked initial symptoms, but showed only a single lesion.

We have heard it alleged that recently and successfully vaccinated persons were sent to the hospital, but careful examination of the patients always revealed either an error in the history or a false estimate of the character of the vaccination. At this point it may be of interest to quote Jenner on the qualifications which a vaccinator should possess. He says: "A general knowledge of the subject is not sufficient to enable one to practice vaccine inoculation: he should possess a peculiar knowledge; and that which I wish strongly to inculcate as the great foundation of the whole is an intimate acquaintance with the character of the true and genuine pustule. The spurious pustule would then be readily detected, whatever form it might assume, and errors known no more." Jenner's concise and apt description of the vaccine lesion should be remembered by all physicians. It resembles, he says, "a section of a pearl on a roseleaf." Indeed, the pearly or silvery appearance of the vesicle is one of its characteristic features. Jenner's description of the course of vaccination is our best guide even at the present day. Any result which deviates to any considerable extent from the description of primary vaccination given by Jenner should not be regarded as genuine. In Jenner's time there was a legitimate means of testing the genuine character of a vaccination. In those days inoculation with variolous lymph was permissible. The surest proof at the present day of the genuine character of a vaccination is the protection conferred against smallpox when the vaccinated individual is exposed to that disease. *Per contra,* when an individual recently vaccinated contracts an unmodified form of smallpox it is in itself proof of the spurious character of the vaccination.

It may be of interest to briefly refer to our experience at the Municipal Hospital during the recent epidemic, bearing upon the matter of vaccinal protection. The following table shows the comparative mortality rates in the vaccinated and the unvac-

1. Typical primary vaccine vesicle on tenth day.

3. Secondary vaccination of doubtful character (twelfth day), followed by a slightly pitted scar.

2. Well marked result of secondary vaccination (tenth day). Lesions too much flattened and depressed for typical primary vesicles.

4. Typical compact vaccinal crust with central depression at the end of eighteen days. Variolous eruption (eighth day) showing modification. (Vaccinated ten days before appearance of smallpox eruption)

5. Vaccine lesion on twelfth day; smallpox lesions on seventh day. (Vaccinated five days before appearance of smallpox eruption. Little or no modification).

cinated; it also gives the mortality percentage in individuals with good, fair, and poor vaccination scars, respectively:

	Admitted.	Died.	Per cent.
Vaccinated in infancy (good mark)	868	7	2.61
" " " (fair mark)	83	10	12.04
" " " (poor mark)	98	14	14.28
Vaccinated cases	449	31	6.90
Unvaccinated cases	465	131	28.17
Vaccinated after infection	63	12	19.04
Total	977	174	17.80

This table shows that the danger from smallpox in vaccinated persons can be measured to a considerable degree by the character of the vaccination scars. It is seen that those showing good scars were better protected than those showing fair scars, and that the latter were better protected than those showing poor scars. It should be stated, perhaps, that we have classed as "good scars" all those distinctly excavated, having a well-defined margin reticulated or foveolated, and altogether presenting the appearance of having been stamped into the skin with a sharply-cut die. Under the head of fair scars are classed all those presenting the same general characteristics, though much less distinctly marked. Under the head of "poor scars" are classed all those which are said to have resulted from vaccination, but which very often were so indistinct or uncharacteristic as to make it difficult and sometimes even impossible to recognize them as vaccination scars.

We desire to call particular attention to the great difference in the death-rate between the vaccinated and the unvaccinated patients. Those who were vaccinated in infancy and showed good scars gave the remarkably low death-rate of 2.61 per cent, as against the high death-rate of 28.17 per cent in the unvaccinated. There is no doubt that all those who showed either good or fair scars were successfully vaccinated in infancy. If we consider them together, therefore, the death-rate is 4.84 per cent. In making a comparison between the vaccinated and the unvaccinated cases, it is scarcely fair to include as vaccinated all the cases showing poor scars, as very many of them doubtless were never successfully vaccinated at all.

The table still further shows that sixty-three patients had been vaccinated after exposure to the smallpox infection, therefore during the period of incubation of the disease. As the death-rate here is much less than among the unvaccinated patients, it is evident that a considerable degree of protection was given.

The following table shows the cases vaccinated after exposure, divided according to the period which elapsed between the vaccination and the appearance of the smallpox eruption:

Vaccinated seven days or less before eruption—			Vaccinated more than seven days before eruption—		
Cases.	Died.	Per cent.	Cases.	Died.	Per cent.
14	5	35.71	49	7	14.28

When vaccination is performed soon after the exposure to smallpox, absolute protection is not infrequently conferred; but when it is delayed a few days the protection may be only partial; and when delayed too long, there is usually none at all. The table shows that the patients who had been vaccinated seven days or less than seven days before the appearance of the eruption of smallpox gave a death-rate of 35.71 per cent, while those who had been vaccinated for a longer period than seven days before the outbreak of the efflorescence gave a death-rate of only 14.28 per cent.

HOME TREATMENT OF TUBERCULOSIS.

By Lawrence F. Flick, M.D.,
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By home treatment of tuberculosis is meant treatment of the tubercular subject in his home under the environments under which he contracted the disease. To attempt to do this is a new departure in medicine of recent origin. That it can be done, however, has been fully demonstrated.

For successful treatment of tuberculosis three agents are necessary: 1st, fresh air; 2d, correct, adequate diet; and 3d, regulation of consumption of energy. These agents are essential, and absence of any one of them means failure. Drugs are contributory or supplementary agents. Sunlight, electricity, and serums are likewise supplementary agents.

Fresh air as an agent in the treatment of tuberculosis means air which retains its full capacity for oxidation, or, in other words, outside air. It must be complete air, free from the products of combustion of animal organisms. It is not necessary that it be mountain air or even country air, provided it is outside air. Outside air, by rea-

son of its constant motion, quickly loses the products of combustion of animal organisms, and for this reason is full and complete for the purposes of oxidation wherever it may be. The part which fresh air plays in the treatment of tuberculosis is no doubt that of helping to transform food into healthy tissue. Food cannot be changed into tissues of the body without oxygen, and metabolism ceases when the supply of oxygen is cut off. For all animal organisms a complete deprivation of oxygen for a few moments is fatal. This ought to give us some idea of what partial deprivation may mean when the organism is struggling against parasitic life. Air which has been breathed and rebreathed has not only lost some of its oxidizing power, but has been loaded with those substances which the organism is struggling to rid itself of. The return of such substances into the system places an additional burden upon an overburdened economy. Moreover, when the aggregate of air taken into the lungs during the twenty-four hours does not contain sufficient oxygen to properly oxidize the metamorphosed food, metabolism is incomplete and the system is poisoned instead of nourished. These evil results are increased when forced feeding is practiced.

In the home of the tubercular patient provision for out-of-door air can be made in various ways. If the patient is in bed he should be properly covered with blankets and the windows kept open to their full capacity. The patient soon becomes accustomed to the cold air and likes it. If he complains of being chilly and it is found that he has ample covers to keep him warm, it should be explained to him that his chilliness is due to his disease and not to the cold air. The fact is he would be just as chilly in a hot room, and he will get over his chilliness much sooner in a well ventilated room than in a close room. If his feet are cold he should have a foot-warmer. When the patient gets up he should be well wrapped, or the windows may be closed for the time. Under no circumstances should the room ever be warmed by any method which consumes the oxygen, such as by gas stove or coal-oil stove. If the patient is about he should be made to sit, properly wrapped in blankets, on a flat, or a porch, in the back yard, on the front pavement, or in a room with the windows open. This sitting in the open air should be practiced for from eight to ten hours a day in all kinds of weather. It can be done in the humblest home. In the sleeping-room the windows should always be open to their full capacity.

Correct adequate diet is the correlative of fresh air in the treatment of tuberculosis. So interdependent are these two agents that neither is of much value without the other. A correct diet is one which will give the largest possible amount of nutrition with the smallest possible amount of labor to the organism. All food must be chosen with an eye both to its nutritive value and its digestibility. Food which requires a long time for digestion should not be too often indulged in, no difference how rich it may be in nutritive qualities. Food which has very little nutritive value should never be taken. A good plan to pursue is to allow but one meal of heavy food a day, but that a royal good meal. Such a meal ought to consist of a pound of beefsteak or roast beef, four or five fresh vegetables, dessert, fruit, nuts, and a cup of coffee, tea, or cocoa. If stimulants are used at all they should be used at this meal. This meal may be taken at any time in the day, but by preference should be taken in the middle of the day. The advantages of this one-meal system are that the patient has a better relish for his food and a larger capacity for digestion. In order that the diet may be adequate, this one meal should be supplemented by large quantities of milk and raw eggs. If the meal of solid food is taken in the middle of the day, at least three pints of milk and three raw eggs should be taken in the forenoon, and an equal quantity in the afternoon. If the meal of solid food is taken in the evening, the milk and raw eggs should be taken during the day and at bedtime. Cereals and fruit, and cheese, toast, and fruit may be allowed for breakfast and supper or lunch. Nuts, such as almonds, English walnuts, pecans, and shell-barks may be taken at any time during the day. Stimulants should not be used except in a mild form at dinner and then only when there is a positive indication for them. Above all things whiskey and brandy should never be mixed with milk and eggs.

Regulation of consumption of energy is the third of the trio of important agents in the treatment of tuberculosis. The rest and exercise of the tubercular patient should be prescribed as carefully as fresh air and diet. While there is much disturbance of circu-

lation, as manifested by rise of temperature and increased pulse-rate, the patient should take no exercise, but recline all day in the open air. When the temperature no longer goes above 99° and the pulse-rate remains below 100, moderate amount of exercise in the form of light work, pulmonary gymnastics, and walking may be profitably taken every day. As the temperature and pulse-rate improve the amount of exercise may be increased, until finally a hard day's work is done. During the time that exercise is introducd into the treatment and until there is no longer any disturbance of temperature and pulse-rate, it is a wise precaution to have the temperature and pulse-rate taken twice a day and carefully recorded. The patient can be taught to do this. Waste of energy by dissipation or through physiological channels must be absolutely avoided. Loss of sleep must be avoided, and even when the patient is apparently well the good old advice of early to bed and early to rise should be observed. Social functions which interfere with regularity of life must be eschewed.

The contributory or supplementary agents in the treatment of tuberculosis, while of less importance than the essential ones, should not be overlooked. The most valuable drug in my judgment is iodine. The best way that I have found of using this drug is inunction of a solution of one or another of the rich iodine compounds, which easily break up and give off their iodine in nascent form. Among the compounds which may be used in this way are iodoform, iodol, europhen, and aristol. These are all soluble in olive oil and cod-liver oil, and are readily absorbed when rubbed into those parts of the skin which are rich in lymphatic glands. Iodol is the richest in iodine of the four, but is not very stable, and for this reason when used should be prepared fresh every day or two. Iodoform is rich in iodine and is quite stable, but is very offensive in smell. Europhen, all things considered, seems to be the most available of the four. Strychnine, arsenic, nitroglycerin, pepsin, pancreatin, hydrochloric acid, phosphoric acid, calomel, gentian, calisaya, nux vomica, creosote, guaiacol, ichthyol, digitalis, iron, and the hypophosphites are some of the drugs which can be used to great advantage in the treatment of tuberculosis. They, however, should be used only when indicated. Pepsin and hydrochloric acid, given in some vegetable tonic as a menstruum, will be found useful in most cases because of the handicap which the stomach is laboring under through reflex disturbance of the pneumogastric nerve and also because of the forced feeding. Arsenic, strychnine, nux vomica, and the hypophosphites can be used in most cases at one time or another to help stop waste or stimulate nutrition. Their effects should be carefully watched, and their use should be suspended when they upset the stomach or cease to do good. Calomel is of great value when the digestive system gets clogged up. When indicated it should be used in fair doses and for a very brief period only. Nitroglycerin is of much value in hemoptysis and when the second sound of the heart is accentuated or the heart seems to be laboring. Digitalis is of use when the heart muscle shows weakness or when the valves are incompetent. It should never be used when the heart muscles are vigorous or the heart shows overaction by accentuation of the second sound or increased impulse. When used under such circumstances it frequently will bring on hemorrhage. Creosote and its derivatives are indicated in all cases in which there is mixed infection of any kind whatsoever. In large doses it seems to furnish some protection against mixed infection.

The serum and nuclein treatments have the indorsement of competent authority and are worthy of trial in selected cases. The serum treatment is expensive and somewhat difficult of application in home treatment. All of these treatments must be looked upon as adjuvants. Sunlight and electricity promise to be valuable adjuvants in the treatment of tuberculosis. Sunlight in the ordinary sense is available everywhere, and should be used by having the patient bask in the sun whenever possible. Sunlight in concentrated form as applied by Finsen is quite promising in curative results, but is expensive and can only be used in institutions. Electricity in the form of the *x*-ray likewise gives great promise for the future, but is not available in home practice because of the expensive instruments required in its application.

In addition to what may be accomplished by remedial agencies in the treatment of tuberculosis, something may be accomplished by preventive measures. Nature strives to rid the system of tubercle bacilli by the process of softening, ulceration, and empty-

ing out of the broken-down tissue. This broken-down tissue contains the seed from which new implantations take place. It is of primary importance that no new implantations take place in an organism struggling against the disease, and in order that the risk from this source may be reduced to the minimum, every tubercular subject should be instructed with great care and much attention to detail in scientific methods of disposal of the broken-down tissue. All broken-down tissue should at once be deposited in a germicide solution or in a covered paper box. If a germicide solution is used it should be strong enough to kill the bacilli in a brief period of time, and should be kept in an open cup with a handle, so that the patient can deposit the broken-down tissue in it without soiling anything. At frequent intervals the cup should be emptied into the drain and scalded out with boiling water. Ordinary lye is a good, cheap germicide. Carbolic acid and corrosive sublimate may be used when cost is not to be considered. When a covered paper box is used it should be enclosed in a tin box with a handle and a lid. Boxes of this kind can readily be had in the market. Great care should be exercised that the broken-down tissue is always deposited in the box and that nothing is soiled. The paper box and its contents should be burned at frequent intervals, and the tin box should be boiled at least once a day. For wiping the mouth paper napkins only should be used, and under no circumstances a pocket-handkerchief. The paper napkin after it has been used should be placed in a paper bag, which can be burned, or in a leather bag, which can be washed out with a germicide. For men a very convenient method is to carry a few cheap paper bags in one pocket, and a number of paper napkins in another, and when a paper napkin has been used deposit it in a paper bag until an opportunity presents itself for burning the paper bag and its contents. For women a caba may be substituted for the paper bags. Under no circumstances should old rags be permitted to be used as a receptacle for broken-down tissue or even for wiping the mouth. With all materials other than paper there is a great temptation to the patient to use them repeatedly because they dry readily, and in this repeated use there is not only danger of inhaling dried broken-down tissue, but of soiling the hands and lips with the moist matter. When a patient gets ready to spit he first takes a deep breath, and if at this time he unfolds a handkerchief or rag into which he has spat before he is bound to inhale some of the matter in the handkerchief or rag if it has already dried out. In order to prevent patients from swallowing tubercular matter with their food, it is well to have them rinse out their mouths and gargle their throats before eating or drinking. Another good practice is to wash the hands carefully before eating.

Colds, influenza, and pneumonia are serious stumbling-blocks in the way of recovery when they occur in a tubercular subject. Many a case is swerved from the upward path to recovery to the downward path of fatality by these complications. The probabilities are that the majority of cases of tuberculosis would recover, and many of them without treatment, were it not for these complications. Colds and influenza are undoubtedly contagious diseases, and pneumonia is very likely communicable in some way. It is of primary importance therefore that tubercular patients be instructed to keep away from persons who have colds or influenza and from places where there is pneumonia. When a tubercular subject contracts a cold or influenza, he should go to bed at once and be placed on treatment for it. No difference how mild the cold may be, this practice should be followed. The patient should moreover be kept in bed until all symptoms of the complication have disappeared. When these complications occur it is important to distinguish between the symptoms which are set up by the tubercular trouble and the symptoms which are set up by the complication, for unless this is done an unfavorable prognosis may be given when it is not really indicated, and errors may occur in treatment which otherwise might be avoided. Pneumonia in tuberculosis is seldom fatal, but it leaves the patient so depressed that the tubercular process is apt to be reawakened and gain virulence in its wake. After a tubercular subject has had pneumonia he should be kept quiet until he has fully regained his strength, no matter how favorable his symptoms seem to be.

Home treatment of tuberculosis differs from sanatorium treatment chiefly in the feasibility of maintaining discipline. Where the patient has the means and is absolutely amenable to discipline, as good results can be obtained at home as in a sanatorium.

With many patients, however, the necessary discipline cannot be maintained at home, and among the poor the means is nearly always lacking. It costs from four to five dollars a week to supply the proper treatment to a tubercular subject, and this is a larger amount of money than people in ordinary circumstances can afford to expend on one member of the family. So far as climatic influences are concerned, it makes little difference, in my opinion, where a patient is treated, provided all the essential agents are at work and the contributory agents are put in operation when needed. Some of my most gratifying results have been obtained in the small streets of Philadelphia, and some of my most humiliating failures have been with wealthy patients in ideal climates where I could not enforce the proper discipline. It is much easier to treat a patient in a sanatorium than in his home, and for this reason sanatorium treatment should always be recommended; but excellent results can be obtained at home, and no case of tuberculosis should be abandoned by the physician because ideal conditions of treatment are not available.

One of the chief difficulties in the way of progress in the treatment of tuberculosis is the skepticism of the general practitioner about the possibility of obtaining results. He has been educated to believe that nothing can be done for a tubercular subject except to send him to another climate, and as few cases can go to another climate he contents himself with making his patient comfortable and easy of mind until death relieves him of his task. In the first stages of the disease he tries to persuade himself, and usually succeeds in persuading his patient, that there is nothing the matter except a little cold or some bronchitis which will come all right. Frequently the symptoms which attract attention are due to a cold and the result of a bronchitis, but underneath them lies hidden the tubercular process which is overlooked. Did the physician but examine his cases more closely, especially after the symptoms of cold have ameliorated, he could not fail to discover the tubercular process. It is during this early stage that most can be accomplished by treatment, and it is always a pity when the opportunity is lost. During the first stage nearly every case of tuberculosis can be cured. When such cases are put on proper treatment recovery is so rapid as to be astonishing. In advanced cases the prospects of recovery are not near so good, but nevertheless many such do recover under proper treatment. All cases in which the acute symptoms have subsided yield readily to treatment even when cavities exist. It must be borne in mind, however, that in such cases exacerbations are liable to occur, and that the treatment will have to extend over a period of years. Recovery is by stages, and progress is only made between the exacerbations. If the patient advances farther between the exacerbations than he recedes during the exacerbation, his progress is satisfactory, and ultimately he will win out. Such patients must be kept under absolute control, as the slightest mistake may prove fatal. No case, however hopeless it may seem to be, should be despaired of until the disease has run its full course, for cases sometimes improve which in the beginning hold out little hope. So long as the tubercular process is limited strictly to the lungs recovery is possible.

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*DIAGNOSIS AND TREATMENT OF TUBERCULAR ARTHRITIS.**

By James K. Young, M.D.,

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There are certain etiological facts connected with tubercular arthritis, whether it occurs in the spine, hip, knee, or other joints, which are valuable in arriving at a correct diagnosis. These are age, sex, heredity, and traumatism. It is a well known fact that eighty per cent of cases of tubercular arthritis occur before adult life. It is also well known that males are more frequently affected than females, and that a hereditary tendency to these affections, together with traumatism, is an important element in the location of the disease in certain joints.

There are also certain signs, or cardinal symptoms, which stand out prominently as danger-signals on a rocky coast, such as spasm, atrophy, pain, and night cries. Too little attention is paid to early fixation of a joint by muscular spasm due to irritation. This is reflex in character—tetanic—and leads to the fixation of the part. Sooner or

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later it is followed by atrophy of the contracted muscles. The pain which accompanies tubercular arthritis is too frequently referred to the peripheral distribution of the nerves. Thus we have in spine disease the pain referred to the anterior portion of the body, and in hip disease the pain referred to the inner side of the knee. The occurrence of night cries is a symptom which is very significant of an extension of the disease to some other part of the joint, especially ulceration of the cartilage. They are characteristic of the second stage of tuberculous disease.

With due attention to these symptoms, and without the occurrence of complications such as abscess or paraplegia, the diagnosis of tuberculous disease in the joints should early be made.

Another significant fact to which sufficient attention has not been given is the antagonism existing when tuberculous disease is suspected in different parts of the body. Tuberculous disease of the hip seldom occurs coincidentally with phthisis, or with tuberculous disease of the glands of the neck. Tuberculous disease of the hip is seldom associated with tuberculous disease of the spine. While lesions may occur in several different joints, they are never active at the same time. One will be active while the other is quiescent. Given an active tuberculosis in one part, it is very unusual to have an active process going on in another part of the body.

This is well illustrated in a patient who died this week from amyloid disease following hip disease. All the internal organs were in an advanced state of amyloid degeneration. The hip-joint had been excised some time previously, the ilium was extensively diseased, and yet the lungs were affected by only a very small focus of disease.

Differential Diagnosis.—The number of diseases from which tuberculous arthritis must be differentiated has increased greatly in the past one hundred years. Before the time of Brodie but two diseases of the joints were recognized—white swelling and arthritis. From a recent chart prepared by the writer to illustrate the different pathological processes with which the joints are affected, it was found that there were about fifty distinct pathological lesions. The differential diagnosis between arthritis, say of the knee-joint, and of synovitis, the disease with which it is most frequently confounded, brings out the different points stated above.

Non-Tubercular Chronic Synovitis.	Tubercular Chronic Articular Arthritis.
1. Marked effusion, capsule thickened.	1. No fluctuation, capsule not thickened.
2. Joint outline enlarged and obliterated.	2. Joint outline distinct and clear.
3. Motion nearly normal.	3. Motion limited.
4. Reflex muscular spasms absent.	4. Reflex muscular spasm present.
5. No atrophy.	5. Marked atrophy.
6. Pain absent.	6. Pain acute upon motion.
7. Limp absent.	7. Limp present.
8. Night cries absent.	8. Night cries present.
9. Relation of femur and tibia normal.	9. Tibia subluxated.

(After Shaffer.)

Tubercular arthritis should be diagnosed from specific arthritis. The slight fluctuation, the induration and enlargement of the joint, the limited motion, the absence of reflex muscular spasm, the slight amount of atrophy present, the presence of pain upon motion, and the absence of night cries, would serve to distinguish this affection. This differential diagnosis does not vary greatly in non-tubercular chronic synovitis, but the history and the effect of constitutional remedies would be of use in clearing the diagnosis.

The disease with which tuberculosis of the joints is most frequently confounded in infancy is articular rheumatism. Rheumatism in childhood is such a rare disease that the occurrence of joint disease should be very carefully investigated for the cardinal symptoms which have already been given. When spasm, atrophy, peripheral pain, etc., occur in a single joint, great care should be taken to avoid an error in regard to the real cause of the disease.

A rare affection with which tuberculous disease is sometimes confounded is sarcoma of the joints. This is most apt to occur in the spine, and in this region it can be differentiated by the history of malignancy in the ancestors, by its rapid course, the early appearance of cachexia, local tenderness, the absence or rounded appearance of the deformity, the absence of abscesses, the early and complete paraplegia, the emaciation and anemia which occur early, and the metastasis which occurs to other organs, especially the liver.

X-ray photography furnishes an important means of diagnosis. By it we can distinguish the amount of destruction of bone tissue present, and can easily distinguish between the presence of synovitis or arthritis. In synovitis the outline of the joint is clear and distinct, whereas in tubercular

arthritis the joint outline is roughened, irregular, and worm-eaten.

Treatment.—The treatment of tuberculous disease of the joints consists of three parts—constitutional, mechanical, and local.

The constitutional treatment of joint disease should be as thorough and painstaking as the treatment of tuberculous disease in other parts of the body, and should include the improvement of the hygienic surroundings even to the change of climate, and particularly should the patient be sent to high, cold altitudes, or to the seashore.

The mechanical treatment of joint disease may be summed up in one word—traction—which is the result of experimentation and clinical experience of many years' standing. Traction may be applied by means of apparatus or by extension appliances of different forms, but whatever the means it should be thorough and should be continued for a very long time. By traction methods recovery from joint disease of tuberculous character will sometimes be effected, while by other methods the results will be less satisfactory, and will frequently lead to the total destruction of the joint.

The local treatment of tubercular arthritis by means of iodoform injections is very valuable in the smaller joints, as in the elbow, wrist, etc., but in the knee and hip I have not found it of any benefit, and usually the injections acted as a foreign body and had to be removed by incision. One drachm of a five-per-cent solution can be thrown into the wrist- or elbow-joint. The part should be fixed during the reaction, and constitutional remedies should not be neglected.

The operative treatment of tubercular arthritis should be thorough when it is required; and there are two points which should be insisted upon in all operations upon the joints: first, the preservation of the body heat, and secondly, rapidity of operation. At one of the hospitals with which I am connected we have in operation an electric mattress which has proven very valuable in preventing the loss of body heat, and has also prevented shock in the majority of cases. There are few operations in surgery in which the shock is more profound than in excision of the hip, which formerly was considered equivalent to amputation at the same point, but at present with the improved methods which have been introduced in the amputation of the hip the former operation is often the more serious.

Rapidity of operation is quite as important in orthopedic surgery as in acute surgery, although it requires more experience and greater skill to perform these difficult operations rapidly. In the knee, for example, if an excision can be performed in thirty minutes it should not be prolonged for two hours. The watchwords in operations of this kind should be "Quickly, safely, and well." Many years ago I witnessed an operation for ankylosis of the knee-joint which required so long a time that I left before it was completed. Much delay in operations may be avoided by planning well before beginning to operate, by having a good corps of assistants, and by rapid manipulation at the time of the operation.

In children erasions of the joints, not formal excisions, are greatly to be preferred, as they interfere less with the growth of the part and may be repeated should occasion require. Excisions of the joints are to be preferred in adults unless the condition of the joint requires amputation.

Treatment of Abscesses and Sinuses.—The treatment of abscesses and sinuses forms an important part of the treatment of tubercular arthritis.

In the greater number of cases abscesses will require incision, but a slight proportion, if they are small, may be allowed to remain unopened. If they are large, if they are increasing in size, and if they are making pressure on important organs, incision should at once be made. The surgeon should be prepared at the time of making the incision to proceed to a more thorough operation upon the joint if the examination prove it to be necessary. In this way much loss of time may be prevented. On one occasion I had to wait a week to obtain the permission of a parent to perform an excision of the hip-joint after I had done an incision of an abscess.

If the contents of the sac can be removed at the time of operation this should be thoroughly done, but if it is so extensive that it cannot be removed the sac should not be manipulated for fear of causing absorption of the tuberculous matter and the production of tubercular meningitis. The cavity of the abscess should be washed with 1:4000 of chloride, with peroxide 50-per-cent, and an emulsion of iodoform oil, 5-per-cent, should be thrown into the cavity. A drainage-tube should be inserted, or a packing of iodoform gauze should be left in the wound

for the purpose of drainage. In some instances after the thorough removal of the sac by curettage or with forceps and scissors, the cavity may be thoroughly rubbed with gauze pads and closed by sutures without drainage.

The treatment of sinuses following tuberculous abscesses is the *bête noire* of orthopedic surgery at the present time.

If the rubber drainage-tubes are not allowed to remain in too long, and if the packing is diminished as quickly as possible, the sinuses will more frequently close than if these points are omitted. The closure of the sinuses may often be hastened by curettage and by the use of pure iodine applied to the walls by means of an applicator. The sinuses should not be closed as long as there is any necrosed tissue at the bottom of the wound, and granulation should be encouraged from the bottom of the wound.

The closure of the sinuses following tuberculous arthritis is frequently followed by disease elsewhere, and this has led to the belief among the laity that the closure of sinuses is not a proper method of treatment. Not infrequently the sinus closes spontaneously because of the occurrence of disease elsewhere. This is well illustrated in a lad who suffered from a large number of sinuses about the hip-joint, and who in the course of hip disease developed phthisis, the sinuses closing abruptly upon the onset of the latter disease. If the necrosed tissue has been properly removed there will be no danger in the healing of the sinuses.

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*THE TREATMENT OF LOCOMOTOR ATAXIA BY EDUCATIONAL MOVEMENTS.**

By John H. W. Rhein, M.D.,

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In December, 1901, I published in the Therapeutic Gazette a paper on the treatment of tabes dorsalis, with special reference to educational movements, in which I intentionally avoided any detailed description of the exercises employed, dwelling more on the general principles involved. In this paper I shall describe those exercises which in my experience have proved to be the most practical and useful ones.

I believe that better results are obtained when the exercises are simple in character and when the patient is given only a small number to practice. He is thus better able to concentrate upon them, and is less apt to be confused when exercising while the physician is not present.

The duration and frequency of the exercises vary with the individual case, and must be modified according to the strength and endurance of the patient. As a rule the séances should be short and frequently repeated. The exercises should terminate at the first sign of fatigue, when the patient should lie upon his back until he feels perfectly rested.

At first the movements should occupy fifteen to twenty minutes at a time, and should be repeated every hour for several hours. I am accustomed to prohibit physical exercise outside of the educational movements for the first month or two of the treatment, preferring to save all the strength of the patient for concentration upon the educational movements.

After a severe attack of pain I send the patient to bed for a day or two and discontinue all movements. I stop them also on "tired days," when for no apparent or explicable reason the patient appears physically depressed.

All exercises are practiced first with the eyes open and then with the eyes closed.

It is desirable though not always practical to have all exercises supervised by a trained assistant, especially during the first few weeks of the cure, in order to insure accuracy in the exercises and to prevent the establishing of any bad habits.

The patient should be constantly admonished to go through every movement deliberately and accurately, and to avoid irregularity of movement. Greater uniformity is achieved if the patient counts as he exercises.

The treatment should be continued for months and years, even if the improvement in the incoördination has been so great as to make it seem apparently unnecessary.

The subject should concentrate to the fullest degree upon every detail of the movements, and perseverance and regularity should be insisted upon.

*Read before the Section on Nervous Diseases, American Medical Association, at Saratoga, June 10, 1902.

With those cases exhibiting great incoordination it is preferable to prescribe at first only the bed movements until a considerable control of the leg muscles has been gained. As improvement takes place, gradually the more complex movements are advised.

We may divide the movements into those performed (1) in bed; (2) in the sitting position; and (3) while standing and walking.

EXERCISES IN BED.

1. The patient lies upon his back and raises his unbent leg as high as possible, holding it stationary for a few seconds before lowering it again to the bed. Any lateral deviation of the leg or jerky movement is carefully avoided. To this end the foot follows a line drawn upon a small blackboard placed at the foot of the bed (see Fig. 1).

Fig. 1.

2. The patient in the same position as in exercise No. 1, raises the unbent leg as far as possible, then *flexes* the leg at the knee to a right angle, extends it again, at the same time bringing the leg to a position a little below the first, repeating the movement at a still lower position, when the leg is placed again upon the bed. The line upon the blackboard is again used as a guide to prevent irregularity of movement (see Fig. 2).

Fig. 2.

3. The leg is moved in a manner as though the foot were upon the pedal of a bicycle, making five complete excursions before resting. This movement is performed first with one leg, then the other, and finally with both legs alternately (see Fig. 3). As in the preceding exercises, the same care is observed not to deviate to one side or the other, using the line on the blackboard as a guide.

Fig. 3.

4. The patient in the same position raises the unbent leg a short distance from the bed, abducts and adducts the leg; raises and lowers the leg; and lastly moves the leg in such a manner that the toes inscribe a circle of varying diameters, squares, and triangles. Lines upon the blackboard are followed in all these movements (see Fig. 4).

Fig. 4.

5. The patient in the same position rests the leg upon a pillow so that the foot lies free from the bed. The foot is then flexed, extended, turned inward, outward, and rotated at the ankle-joint (see Fig. 5).

Fig. 5

MOVEMENTS PERFORMED IN THE SITTING POSTURE.

6. The patient, seated upright in a straight-backed chair, moves the leg as in exercise No. 3—*i.e.*, the bicycle movement. A blackboard line is again used to guide the foot properly. Each leg performs this exercise

separately, and finally both legs alternately (see Fig. 6).

Fig. 6.

7. In this movement the thigh is raised as high as possible, the leg then extended fully, then returned to the original position, lowered, again extended, and finally placed upon the floor (see Fig. 7).

Fig. 7.

8. The patient in the same position raises the leg so that while the toe remains upon the floor, the heel is raised as high as possible. Both legs perform this movement alternately (see Fig. 8).

Fig. 8.

9. A blackboard placed before the patient is marked with circles, squares, spirals, triangles, etc. The tip of the foot moves in the various directions indicated by the figures marked upon the blackboard (see Fig. 9).

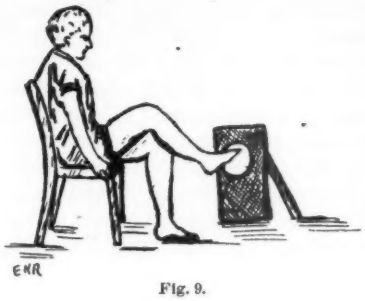

Fig. 9.

STANDING AND WALKING EXERCISES.

10. The patient practices standing with feet apart and close together with eyes open and closed, with and without support.

11. A stool about a foot high, having its upper surface divided into equal spaces, is placed before the patient, who touches designated spaces with the tip of the foot, at the same time balancing himself with or without support. The foot is brought back nearly to the floor after touching each space. This exercise may be greatly varied by touching first a space on one side, then one on the opposite side, and so on in such a manner that each successive space touched shall be in a different position on the stool than the former one (see Fig. 10).

Fig. 10.

12. The patient walks heel and toe along a straight line, spiral line, zigzag line, and circle drawn upon the floor. The eyes at first may be directed upon the floor about four feet in front of the patient, and later directly in front of him.

13. In walking the patient lifts the leg as high as possible partially flexed at the knee, and then places it immediately in front of the one upon the floor, following straight lines, spiral lines, etc., just as in the preceding exercise (see Fig. 11).

Fig. 11.

14. The patient walks, avoiding objects placed at irregular intervals upon the floor. Blocks of wood, bricks, or books serve the purpose of obstacles.

15. In the standing position the legs are moved as though the patient were walking, but the feet are returned to the original position, the patient thus remaining stationary. The thigh in this movement is brought as near as possible to the abdomen (see Fig. 12).

Fig. 12.

16. The patient practices standing on one leg, then on the toes of one foot. At first support with both hands, then with one hand, and finally with neither, is permitted.

In all of these exercises when practical the foot is held in an extended position. While this makes their performance much more difficult, it must be insisted upon, as by this means the tendency so characteristic in ataxics to place the heel down first is overcome.

MOVEMENTS TO CORRECT ATAXIA OF THE HANDS.

1. The patient points to specified marks upon the blackboard placed before him. At first this is done with eyes open, later with the eyes closed.

2. The fingers move over various lines and figures marked upon the blackboard.

3. The fingers are slowly flexed and extended, singly and together.

4. Slow five-finger exercises upon the piano are practiced.

5. Various figures upon the blackboard graduated from simple to complicated are traced by the patient.

6. Small objects such as dice are picked up and placed in specified places.

7. Pegs are placed in holes in a board.

ANKYLOTIC RIGIDITY OF THE SPINE (RHIZOMELIQUE SPONDYLOSIS) MUCH IMPROVED BY THE USE OF HOT AIR.

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The marked improvement in the patient's condition following the therapeutic measures used is the principal reason for reporting a case of this affection. It is not to be expected or claimed that similar favorable results will follow in the case of every sufferer from this distressing complaint, but that some can be helped seems evident from the results obtained.

The history of the case is as follows: T. T., aged thirty-seven years, a resident of New Jersey, and a farmer by occupation. He has always worked very hard and been exposed considerably to the weather. One brother died of tuberculosis, otherwise the family history is good. He has had most of the infectious diseases, including malaria, and has always been subject to headaches and "neuralgia." Venereal history is denied, and his habits are good.

Four years ago the first symptom of his trouble appeared as a painful swelling of the metatarsophalangeal joint of the right great toe, and a similar condition at the insertion of the left tendo Achillis. The symptom disappeared from the left foot in the course of a year. Six months after the above symptoms appeared occasional "cold sensations" were noticed in the region of the left hip-joint; in a short time stiffness of this joint was noticed, and frequent attacks of pain in the adductor muscles of the left side and in the course of the left sciatic nerve

were experienced. One and a half years later atrophy and loss of power were noticed in the muscles of the thigh and buttock of this side. About this time also the left knee became swollen and painful. Two and a half years ago, difficulty in rising from the sitting position was noticed. This he says was due to "stiffness in the lower part of the back." This gradually increased until he was unable to stand erect. There was also at times considerable pain in the back.

FIG. 1.

FIG. 2.

Since this he has also had attacks of pain in the right and left shoulder-joints and in the left wrist, but these symptoms soon disappeared.

The general appearance of the patient upon admission to the hospital is well shown in Fig. 1. Examination showed a painless swelling of the right metatarsophalangeal joint of the great toe, with marked crepitation when the joint was moved; a similar condition of the left knee with restricted movements was also present. The muscles of the left thigh and buttock were atrophied, but responded well to the faradic current. When the patient was flat upon his back it was impossible to completely straighten either leg, and he slept in a semi-recumbent position with pillows under the knee-joints. He walked with the aid of a cane, as is shown in Fig. 1; his steps were short, owing to the restricted movements of the hip-joints, and there was great difficulty in going up or down steps. He was soon fatigued, and when tired had considerable pain in the back, which often kept him awake at nights. It was impossible to bend the spinal column in any direction excepting slightly forward and backward from the hips. The knee-jerks were normal, and excepting pain there were no sensory symptoms.

He was placed on the best diet that could be obtained, given a pill of iron, small doses of bichloride of mercury and chloride of arsenic, and hot air at a temperature of

about 300° F. was applied daily to the back and hips by means of Kelly's apparatus. The improvement was almost immediate; the pain soon disappeared, he slept well, and in the course of a month he could turn in bed, which it was impossible for him to do previously. After two months' treatment he could assume a position nearly erect (shown in Fig. 2), and could walk considerable distances without the aid of a cane.

The improvement, while to some extent due probably to good diet, rest, and the drugs used, seemed to be principally due to the hot-air treatment; this latter was used for a short period before his coming into the hospital and before the use of other therapeutic measures was begun, and, as before stated, the pain was almost immediately relieved.

A STUDY OF CYCLIC VOMITING, OR AUTOINFECTION, AND ITS TREATMENT.

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Within the past six years, since my attention was first called to this trouble as separate and distinct from other diseases and causes that produce vomiting as a prominent symptom, I have had nine cases under my care. But owing to the meagerness of literature on this subect, the scarcity of reported cases, and the too meager and indifferent therapeutical suggestions offered for the successful treatment of this complaint, it has been a source of trouble as well as pleasure and profit to the writer. Cyclic vomiting is a disease of adult as well as of child life. I find from the cases under observation that persons of wealth or of comfortable circumstances are more apt to suffer from this disease than are those of the poorer classes.

It requires much care on the part of the physician to make a differential diagnosis between this disease and any one of several complaints that are more common because of the similarity of their symptoms. In adults this disease is almost invariably mistaken for an attack of "biliousness" because of their common symptoms—headache, nausea, vomiting. In children it may be and often is mistaken for "biliousness," acute indigestion, nervous dyspepsia, or one or another of the gastrointestinal disorders, and last but not least it may with much assurance be pronounced a case of "worms."

There is, I find, a wide variation of opinion among observers and writers of acknowledged ability as to the cause and probable seat of the disease. For instance, Fenwick calls this a disease of the stomach. Pepper does not believe this, nor does he believe that it is dependent upon either functional or organic disease of this organ. Holt says: "In cyclic vomiting it is quite probable that the cause is the accumulation of some toxic agent in the blood, and that the vomiting may be eliminative." Musser thinks "this disease is probably a gastric neurosis and has analogies with migraine." He continues: "There is no reason to believe that it is reflex in origin." Then he ventures to add: "It may be due to the accumulation of toxic substances." Later, when speaking of lithemia, a disease most often confounded with the one under consideration, he says: "It may be a convenient term for the *autointoxication* which takes place in diseases of the gastrointestinal tract." Thus we might quote from other excellent authorities with the same confusing result. That there is such a disease there can be no doubt, and that it is of frequent occurrence and usually mistaken for one of several diseases that are more common is fully believed by the writer.

Case I.—My first case was that of a professional man, aged forty-nine, married, brunette, spare build, active temperament, irregular habits, who has been subject to "vomiting spells" from early boyhood. The time limit to these spells is three months, and they come so regularly and are so punctual in their course that the spells never vary over a week in point of time. He feels a slight indisposition which increases rapidly, then a headache. These symptoms may appear in the morning or afternoon, but in either case he will be very sick by night. Invariably he is unable to eat by supper-time, and by bed-time he begins to vomit, first the contents of his stomach, then mucus and bile, and as the malady progresses a watery, bilious-looking substance of greenish color appears having a very peculiar odor. By this time the odor may be detected in the breath and from the body. Fever has set in, which may reach 103½° F., and the pulse accelerated somewhat. Headache has made its appearance and is of a dual nature. The

frontal headache is over the eyes and through the forehead, and is of a dull, steady, persevering character, while the temporal headache is of a bounding, tearing, throbbing nature and is constant in location, being confined to a space about the size of a silver dollar in each temporal region and near the temporal arteries. The face is flushed, excepting a space around the end of the nose and around the mouth, which is of a white, blanched color, giving the nose the appearance of having been pinched. The eyes are slightly congested, the pupils dilated; the tongue may be coated with white fur if the stomach was empty when the attack commenced. If the stomach was not empty the tongue is coated with a yellowish-colored fur which extends from the middle central portion of the tongue to its base, which part is always heavily coated regardless of the distinctive color of the fur, the remainder of the tongue being clean and moist. Between spells of vomiting the patient lies upon his back with limbs flexed upon the body, or at least with knees drawn up. The stomach is retracted and very sensitive to the touch, and almost invariably rejects anything taken into it. The bowels are constipated; the patient groans and complains of his stomach and nausea. The pain in the stomach is of a peculiar type, being akin to a bruised feeling, and is between a dull burning pain and an ache. The nausea is intense. There is a hyperacidity of the stomach, which becomes more pronounced as the malady progresses. It is at this period there may be noticed for the first time in the course of the ailment, perhaps, a very peculiar odor of intense and persistent nature, due to the presence of acetone in excessive quantities, and noticeable in the breath, vomit, urine, and general effluvia, mingled with that intense acid smell spoken of before. It will be observed that this odor does not occur in any other disease, at least not in such quantities as we have it in these cases of cyclic vomiting. But in this disease it is always present and is pathognomonic. So true was this in the case under consideration that I was told by him, while attending him in one of his spells, that he would not get well until he had thrown off that "phlegm that had such a strong odor." This was told me at a time when I believed such troubles to be nothing more nor less than "biliousness," and I therefore took slight notice of either the remark or odor. The malady becomes more intense until the system is relieved of this mucus, which is, or contains, the exciting cause of the disease; then during the course of from thirty to forty-eight hours the condition of the patient becomes of a quieter nature, and he all but exhausted sinks into a sleep, to awaken convalescent. Recovery, as a rule, is rapid and certain, and thus he goes till the next period of attack, when the experience is again repeated with exact regularity, but with the possibility of greater intensity.

CASE II.—A merchant, aged forty, married, blond, habits regular, full round form. Attacks mild and lasting only twenty-four hours; cyclic time six months, from which they do not vary over ten days.

CASE III.—Aged thirty-eight, brunette, married, large full form, the mother of four children. Attacks vary in intensity, cyclic time one month; attack may occur during menstrual period, but no connection can be discovered between the disease and the menses. Variations in the time of periodic attack never exceed two days.

CASE IV.—Housemaid, aged thirty-six, brunette, single, spare form, slow in action, steady and even in manner of life. Intensity of attacks varies from an exceedingly mild form to one in which life is jeopardized. She is unable to foretell the intensity of an oncoming attack until it is well under way. Cyclic time three months. Variation in point of time from seven to twenty days; delayed attacks have no influence whatever on succeeding ones.

CASE V.—Widow, aged thirty, blonde, spare form; lives a steady, well regulated life. Attacks moderately severe; cyclic time varies from one to six months; the only case under my care that recurs with so great irregularity.

CASE VI.—Married woman, aged thirty-six, mother of several children, of small, spare form, brown hair and eyes. Attacks very severe; cyclic time one month, but much care needed in life and dietary to prevent precipitation of attacks. This is the severest case I have attended.

CASE VII.—Aged twenty-six, married, mother of one child, blonde; tall, spare form. Attacks mild; cyclic time thirty days. In this case the attacks recur with the greatest regularity of any I have noted.

CASE VIII.—Married woman, aged thirty-four, brunette, mother of two children,

of delicate organization. Attacks would be mild but for the delicate health of the patient. Cyclic time five months. Variation in time of recurrence ten to twenty days.

CASE IX.—Girl, aged twelve, blonde, thin spare form, tall for one of her age. Attacks very severe, in fact the worst case on the list; several times the life of the child hung in the balance.

In recounting these cases I have refrained from going into full details because the history of one moderately severe case is typical of all others, excepting of course temperamental differences which I have endeavored to show in the foregoing history.

ones. The published history of this trouble gives but little encouragement so far as therapeutic aid is concerned, and regardless of the means used the disease seems to have had its full run, and that in almost unmodified form. This fact, while deplorable in itself, stimulated me to study the cases under my charge with a greater degree of care than I had previously done.

The differential diagnosis will not prove difficult when proper time and care are given to a study of the complex symptoms presented. When we remember that each case is accompanied by a class of well defined symptoms that can be easily noted, we

DIFFERENTIAL TABLE.

	"BILIOUSNESS."	ACUTE INDIGESTION.	CYCLIC VOMITING.	NERVOUS HEADACHE.	NERVOUS DYSPEPSIA.
Fever.	Never very severe.	Very slight, if present.	Always present, and is of a uniform nature; may reach 103½° F., and is in ratio with severity of the disease.	Slight, if any.	Very slight, if any.
Headache.	Frontal, severe.	Frontal, but not constant.	Dual in nature; the frontal is of a dull character, while the temporal is severe, throbbing pain.	Unilateral, left side in the majority of cases.	Very mild, if any.
Tongue.	Coated yellow at first, then white or a pasty white.	Coated yellowish-white in severe cases, clean and moist in the majority of cases.	Base heavily coated, dirty yellow; rest of the tongue clean and moist.	Clean and moist.	Clean and moist.
Litmus Test.	Acid.	Alkaline or slightly acid.	Intensely acid.	Alkaline.	Alkaline.
Taste.	Bitter.	Normal.	Very acid.	Normal.	Normal.
Nausea.	Variable.	Slight.	Intense.	None, or very slight.	None, or slight.
Vomiting.	Generally in the morning.	Rare.	Almost constant.	Rare.	Rare.
Abdomen.	Slight tenderness.	Very slight tenderness.	Very tender, and retracted.	Normal.	Normal.
Appetite.	Can partake of nourishment.	Can partake of nourishment.	Cannot partake of anything.	May be normal.	Normal, with restricted diet.
Bowels.	Constipated, clay-colored stools.	May be loose, often clay-colored stools.	Constipated, stools normal color.	Normal.	Normal.
Skin.	Hot, burning, or bathed in perspiration.	Cool—normal.	Hot, dry—a burning sense of heat.	Cool or normal.	Cool or normal.
Urine.	Scanty, high-colored, heavy odor.	Loaded with lithates, urinous odor.	Scanty, high-colored, very peculiar odor.	Normal, odor normal.	Normal, odor normal.
General odor of the disease observed under proper hygienic conditions.	Distinctly of a bitterish urinous odor, and bears a ratio to the intensity of the disease.	Normal, or of a faintly sour, sweaty odor, and bears a ratio to the intensity of the disease.	A heavy, peculiar odor (acetone), and is out of all ratio to the intensity of the disease.	Normal.	Normal.

In all forms of this disease there can be noticed certain well defined and pronounced symptoms which were present in all the cases reported.

In adults, as heretofore mentioned, this disease is more frequently confused with "biliousness" than perhaps with any other condition; nervous or sick-headache coming in for second place. While it is my belief that these two diseases are more common than is cyclic vomiting, yet the three form a triad of diseases that cause more genuine misery than do many of the more serious ought to make a clear diagnosis and render more efficient aid to the sufferer.

A detailed comparison of those diseases having something in common with cyclic vomiting, and which are apt to be confused with it, might aid us in its recogniton.

Gastroduodenal and other catarrhs of the intestines may be dismissed with but few words. The history of these troubles would preclude the possibility of their being mistaken for cyclic vomiting. Here we have sharp colic pains and diarrhea, which alone would clinch the diagnosis, without men-

tion of the many other symptoms which always accompany these troubles, but which find nothing akin to them in cyclic vomiting.

So much for the history and differential diagnosis.

The disease proves fatal only in those cases in which the physical condition of the patient cannot withstand the prolonged effect of the poison, which seems for a time to have complete control of the system; for after the first few hours of the disease the stomach rejects all medication and food. This it does without delay, so that it is unwise to attempt to give anything by way of the stomach after severe vomiting has set in. I would add that the prognosis is favorable.

Treatment.—Not very much in the form of treatment can be gathered from the meager number of cases reported. Of the three cases reported by Dr. Marcy two were fatal, and his form of treatment was the hypodermic use of morphine and atropine. I found this procedure very questionable because of its dangerous effects on some of my patients, and would therefore advise against its use in all forms of treatment. My experience has taught me that whatever is to be done for the patient must be done in the early stages of the disease, or else it is safer to let the disease run its course. At first I tried all manner and modes of medical treatment, with little or no success. I then washed out the stomach until the water returned free from odor. At the same time I flushed the large intestines, and repeated this until judging from the condition of the returned water, these parts were absolutely clean. Yet after all this the disease would continue on its regular course as before. This caused me to think that the seat of the disease might be in the small intestines, so that with the foregoing treatment I would give evacuants, commencing with the milder laxatives, passing in case of their failure to cathartics, saline and drastic purgatives, meeting with a varying degree of success. From this I learned that to give a remedy that would act upon the small intestines quickly, kindly, and with certainty, would be the ideal prescription and guarantee relief if not a cure for the troublesome disease. After many trials and a careful study of all remedies which I thought could be used with a hope of gaining this much-desired end, I have in a measure succeeded. After nearly six years of experimentation I have pronounced six of my cases permanently cured. The other three are required to continue the treatment to prevent its recurrence; they have thereby had perfect security against suffering from acute attacks. The remedies used have a selective action upon the small intestines, a fact which I have had occasion to observe many times during the past four years in a way and under circumstances that could admit of no doubt. They act with a kindly certainty that is delightful to witness, and almost at the outset of the disease cut the period of attack so that when the patient recovers from the effect of the "old-fashioned physic," as one calls it, the disease is ended and the patient convalescent.

See that the medicines are pure, fresh, and prepared as directed. Give no other medicine. Regulate the size of the dose and the frequency of its administration to suit the strength and resistive powers of the patient. Supply patients with the medicine, with instructions to take as directed at the very onset of the attack.

℞ Pulv. myrrh et aloes, 3ij;
Pulv. guaiaci, 3jss;
Pulv. capsici, 3j.

M. Triturate in a porcelain mortar to an impalpable powder, and add:

Ol. cinnamomi, gtts. xxv.

M. Fiat capsule No. xxv. Sig.: A capsule every four hours until bowels act in a free manner.

THE USE OF BORAX AND BORACIC ACID AS FOOD PRESERVATIVES.

VAUGHAN and VEENBOER, in *American Medicine* of March 15, 1902, state that from their studies and reading of the literature they can draw the following conclusions:

1. The use of borax or boric acid as a preservative in butter and cream in the quantities specified in the recommendations of the English Commission is justified both by practical results and by scientific experimentation.

2. The dusting of the surfaces of hams and bacon which are to be transported long distances with borax or boric acid, not exceeding 1.5 per cent of the weight of the meat, is effective and not objectionable from a sanitary standpoint.

3. Meat thus dusted with borax or boric acid does not become slimy, because the preservative thus used prevents the growth of aerobic, peptonizing microörganisms.

The Therapeutic Gazette

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Leading Articles.

TRUE AND FALSE VACCINATION.

We are glad to be able to present to the readers in the present issue of the THERAPEUTIC GAZETTE an excellent article upon this important subject. The Municipal Hospital of Philadelphia, in which the larger part of the information contained in the article was obtained, is devoted solely to the treatment of contagious diseases, and therefore Dr. Welch and Dr. Schamberg have had unusual opportunities for reaching correct conclusions in regard to this very important subject, a subject which is of importance because of its great prophylactic value and because of the recent widespread epidemic of smallpox throughout the United States and in many other portions of the world. The matter is also of great importance because since the last great epidemic of this disease the methods of vaccination have been considerably modified, and we have had the introduction of glycerinated lymph and changes in the technique of obtaining the virus and of utilizing it in human beings. All these changes are capable of giving us results quite different from those which have been heretofore obtained. It is with the idea of giving our readers a complete and correct conception of this important subject that we publish not only the text but also some excellent illustrations which are considered by Dr. Welch and Dr. Schamberg to be very typical. It is also of interest to note that in the experience of these writers glycerinated lymph is better than that on dried points.

THE VALUE OF ALCOHOL IN MEDICINE.

We have so frequently discussed this important subject in the editorial columns of the THERAPEUTIC GAZETTE that we feel some hesitation in again approaching it. But this hesitation is overcome by our realization of its importance, and by the fact that it is a matter of continuous discussion by most of our contemporaries. The *Boston Medical and Surgical Journal* in a recent issue has devoted a very considerable amount of the space which it gives to original articles to a series of papers which were read before the Suffolk District Medical Society of Massachusetts, in which a summary is given of our scientific and clinical knowledge concerning the physiological action and clinical value of alcohol.

In the first paper, which is by Dr. Hewes, we find a very exhaustive consideration of many of the experimental researches which have been made by well-known pharmacologists and by others not so well known. As Hewes well points out, the special purposes for which alcohol is generally used as a therapeutic agent in medicine are as a heart stimulant; as a nerve stimulant or general tonic; as a digestive stimulant; as a food; and as a general remedial agent in acute infectious conditions. In regard to its value as a stimulant, Hewes concludes that the good opinion which most of the profession hold concerning its influences is fictitious and not based upon any true conception of an influence which it actually exercises. Any stimulant effect which it seems to produce he thinks is due to the reflex irritation to the nervous system which is caused by the entrance of an irritant substance into the stomach, and he denies that

under its influence any true stimulation of the circulatory system takes place. Hewes evidently does not side even with the school of Binz and his followers, who hold that alcohol when mixed with the blood first stimulates and then depresses the nervous system; but on the contrary with Schmiedeberg and others, who hold that from the beginning it is a depressant. Not only does he do this, but he also suggests that clinical experience is entirely in accord with these pharmacological investigations, and he cites those experiments which have been made upon troops in the arctics, in the tropics, and elsewhere, which have shown that alcohol always exercises an influence which is deleterious, and never one which is advantageous. Further than this, Hewes believes, after a careful study of the literature, that alcohol can be considered in one sense a food in that it prevents tissue waste, and by its combustion perhaps adds force to the body. But while he believes that physiologically this is true, he goes on to say that it may not be advisable to administer alcohol for this purpose in medicine, since while it may be burnt up in the body and so afford energy, its other effects are so deleterious and harmful that its evil influences outbalance any effects for good which it may produce; and he believes that this holds true not only in health but in disease.

It is interesting to note in this connection that at the last meeting of the American Physiological Society Lee and Gallant reported the results of their experiments of the influence of alcohol on muscle, employing ethyl alcohol in various percentages and injecting it into frogs in quantities proportional to the weight of the animals. What may be fairly considered medicinal doses caused the muscles of the frog when stimulated to contract more quickly, relax more quickly, perform a greater number of contractions in a given time, and do more work than the muscle without alcohol, while the onset of fatigue is at the same time delayed. In some instances the increase in the amount of work performed is more than ten per cent. A personal acquaintance with the physiological work of Dr. Lee gives us the utmost confidence in any results which he may reach, and it seems to us that his conclusions of this matter have much bearing upon the important problems which are herewith discussed. These same investigators naturally found that very large quantities of alcohol were detrimental to muscular action.

Hewes also thinks that under certain circumstances alcohol may act as a narcotic, and believes that its employment under these circumstances is rational; but here again he thinks that it is a narcotic which possesses many disadvantages which are not possessed by other narcotics not so commonly employed, and he asserts that in pneumonia his conclusion has been, from practical experience, that it is of no particular value at any time in the disease, or at least that any influences for good are again more than counterbalanced by influences for harm. In concluding his article he unfortunately seems to be inclined to ride two horses, for he says that the intention of his review is not to deny that alcohol has any value as a therapeutic agent, or that all its traditional use in such a capacity is irrational, but simply to present a critical study of its use, so that its employment will be more carefully considered. This object is certainly most laudable, but it gives one a far different impression of the author's attitude than the preceding text, in which he evidently is arguing for the casting aside of alcohol from our therapeutic armamentarium. That the drug is undoubtedly sadly abused by physicians, not to speak of others, is of course well recognized.

In contradistinction to the article which we have just quoted is one by Dr. Shattuck, one of the faculty of the Harvard Medical School, an article which has caused much discussion in the columns of the medical journals, and entitled "A Clinician's Estimate of Alcohol as a Therapeutic Agent," in which Dr. Shattuck, well recognizing that certain pharmacological investigators have condemned alcohol, on the other hand speaks most positively concerning the great advantages from the employment of this substance in clinical medicine; and he again is followed by Dr. Whittier, of Boston, who entertains profound convictions of the therapeutic value of this drug, although he is careful to emphasize the fact that he does not mean the alcohol of the shops, nor the brandies, whiskies, rums, nor wines so commonly sold, but rather that form of absolute alcohol which is guaranteed by Squibb, which is properly prepared, and which, if properly diluted, becomes a valuable remedy. Naturally Whittier and Shattuck are both opposed to the abuse of

the drug, and emphasize the fact that conclusions drawn from laboratory work are not in harmony with bedside observations in the matter under discussion. Finally Whittier concludes his article by saying that he is unable to comprehend why men who are insistent on the utmost purity in drugs persistently employ mixtures wherein alcohol of doubtful quality is employed.

We have therefore the opinions of two active clinicians opposed to the opinion of another of considerable clinical experience, but not so extensive a one as that of those whom we have just quoted. It is not fair to the discussion, however, to ignore a paper by Dr. Cutler in the same issue, in which the question of alcohol in combating septic processes is discussed. We are entirely in accord with Dr. Cutler that in the presence of most forms of infection in the sense of septic infection, alcohol does not really possess the value which has been credited to it. We cannot help feeling very strongly the opinions which we have already reiterated several times in these pages in regard to this important subject.

Without the slightest intention to disregard or discredit the accurate investigations which have been made by a very considerable number of laboratory investigators, it still seems to us incredible that the world at large, and generation after generation of physicians, should have been so completely misled as to the action of a remedy as to believe that it was useful as a stimulant when in reality it was not only useless but harmful. While it may be true that the administration of alcohol in certain stages of typhoid fever does not really exercise a stimulative influence upon the circulatory apparatus itself nor upon the nervous system, there can be no doubt that its proper administration under these circumstances does improve the condition of the circulation, digestion, and nervous apparatus. And again and again, when alcohol has been properly employed in the treatment of this malady, we have seen it produce a satisfactory condition of the circulation which before its use had been distinctly unsatisfactory. It is a most common experience for physicians with large hospital facilities to meet with patients who at the end of ten or fourteen days of typhoid fever manifestly have a feeble pulse and distant heart sounds, and in whom a more normal pulse and more distinct heart sounds can soon be produced if alcohol is properly given them.

In our experience no other drug does as well in the condition that we have named; although we do not mean to intimate for a moment that all patients are benefited by it, since some of them undoubtedly manifest idiosyncrasies in regard to the effect which it exercises upon them.

THE THERAPEUTIC VALUE AND MODE OF ADMINISTERING PHOSPHORUS.

Phosphorus is a drug which at one time had a greater popularity with the medical profession than it has to-day. While fashions exist in regard to remedies, in this particular instance a potent factor in diminishing its clinical employment was, in all probability, the belief that it is a substance which is apt to be oxidized when it is brought in contact with organic materials, and that when oxidized it fails to produce effects which are identical with those of the drug in its original form. So far as we know, no evidence has ever been produced to determine this important fact, and a contribution in the *British Medical Journal* which has recently been made to the subject by Mr. Martindale, of London, at the instigation of Sir William Gowers, seems to us, therefore, to be worthy of editorial notice.

Recognizing the prevalent opinion that the oxidizing process spoken of might occur, Martindale prepared phosphorus pills with the alkaloids strychnine and morphine, and with quinine sulphate, nitroglycerin, and zinc valerianate. The pills were made according to the method advised in the British Pharmacopœia, and also with cocoa butter and prepared suet, and large doses of phosphorus were placed in the pills. After the pills were made, they were allowed to stand, properly protected, for a number of weeks, and analysis subsequently showed in the case of strychnine pills that neither the phosphorus nor the strychnine had been materially changed, although it was thought that the phosphorus would partly destroy the alkaloid. When the morphine and phosphorus pills were examined, varying results were obtained, which Martindale thinks were due to difficulties in the technique rather than to any decomposition.

When quinine sulphate was employed, this alkaloid did not suffer in any way from contact with the phosphorus; the pills of nitroglycerin contained 1-50 grain of phosphorus and 1-50 grain of nitroglycerin, and no evidence of decomposition was found when cocoa butter was employed as a base.

In the case of the combination of phosphorus with zinc valerianate, a small quantity of zinc phosphate was formed, which, however, Martindale believes was made during the process of extraction and not in the pill. In all instances a number of weeks after the pills had been made they were found to be luminous in the dark, which indicates that in general no great amount of oxidation of the phosphorus had set in, and Martindale concludes that no decomposition worthy of note takes place in either the organic matter or the phosphorus when they are mixed in pill mass.

ANESTHESIA DURING SLEEP.

The question as to whether it is possible to produce surgical anesthesia by the administration of chloroform while the patient is asleep without causing a struggle or a temporary return of consciousness has very frequently been discussed in the lay journals, in medical journals, and by lawyers in medicolegal cases, when the claim has been made that the drug was employed to overcome sleeping persons. While it is quite true that most individuals in health would be sufficiently disturbed by the use of ether to cause them to awake, it is also true that it is entirely possible to give chloroform to a sleeping patient without waking him. This matter would not be of very great importance were it not that now and then claims are made that it is impossible to use chloroform in this way without seriously disturbing the patient. Some years ago in the neighborhood of Philadelphia, the writer of this editorial gave expert testimony that the chloroformization of a patient during sleep was entirely possible. In this instance the prosecution claimed that chloroform had been given to a sleeping woman for the performance of a rape. In a very considerable number of instances surgeons have given chloroform, anesthetized the patient, and performed the operation, and the patient has returned to consciousness to find the operation completed with no previous knowledge of the attempt. Still more recently the writer of this editorial has given evidence, in the trial of a man by the name of Patrick, who was accused of the murder of an aged man named Rice, that the administration of chloroform to a sleeping patient was possible, although other witnesses asserted that this was impossible. As a matter of fact medical literature contains quite a large number of cases which have been reported, proving that the writer's testimony was correct. Paugh, in the *Journal of the American Medical Association* of May 18, 1901, has reported three cases in which he accomplished this in children ranging from four to nine years of age; while Stone, of Cleveland (*Cleveland Medical Journal*, January, 1902), also reports similar success in children, and also instances in which he successfully anesthetized adults with chloroform while they were sleeping. Stone also reports an instance in which a resident physician at one of the Cleveland hospitals chloroformed a colleague who was soundly asleep at the time that the anesthetic was given.

THE RISE AND FALL OF A NEW MEDICINAL SUBSTANCE.

Eighteen months or two years ago the French journals fairly teemed with enthusiastic reports from various clinicians as to the extraordinary advantages which were possessed by the cacodylate of sodium, and other cacodylates, in the treatment of various forms of disease, and while we were far from being convinced that they possessed the extraordinary remedial power which was claimed for them, we nevertheless felt it our duty from time to time to insert brief abstracts of these reports in the Progress columns of the THERAPEUTIC GAZETTE. Among other claims which were made for the cacodylate of sodium was that it produced remarkably valuable results in the treatment of pulmonary tuberculosis, even in patients who were somewhat advanced in this disease, and this was one of the reasons why doubt was first thrown upon its value in the mind of the writer of this editorial. We have noticed that with the passing of time the French journals have been less and less concerned with the therapeutic efficacy of this compound, and we

note with interest a paper which has recently been contributed by Dr. Thomas R. Fraser, the well known Professor of Materia Medica in the University of Edinburgh, which he read before the Edinburgh Medico-Chirurgical Society on March 5, 1902.

In the course of his paper Dr. Fraser remarked upon the large number of favorable reports which had been made concerning the influence of the cacodylate in those diseases in which arsenic is reputed to be of benefit, and stated that these recommendations were based on the supposition that as cacodylates, although rich in arsenic, are almost inert, large quantities of arsenic may by their administration be introduced into the body with therapeutic advantage and without disagreeable effects, and there can be no doubt that hypodermic injections of cacodylate of sodium can be given until an equivalent of liquor arsenicalis is administered. On the other hand, Fraser felt convinced that an inert compound of arsenic could not in all probability produce the therapeutic effects of the more active arsenic compounds, and so he made a series of experiments in cases of chorea, eczema, and leukemia. He failed to find that the cacodylate produced the extraordinary effects which were claimed for it, except in instances where the cacodylate of iron was employed, when the iron was probably responsible for the benefit. He points out that the arsenic is so firmly locked up with the methyl groups in the cacodylates that the salts give only the reactions of the base and not of the arsenic, and in order to liberate the arsenic prolonged oxidation with mineral acids is necessary. He therefore examined the urine of patients who were taking cacodylates, and found that it gave no reaction with Marsh's test, and he concluded therefore that the cacodylates pass through the body in a state of stable combination, with the arsenic so firmly locked up that it cannot be disassociated to form active substances, and thus exert the toxic and therapeutic effects of the usually employed preparations of arsenic.

As is pointed out in the *Medical Press* of March 12, 1902, the condition of the cacodylates is analogous to the action of cyanogen, which, while active in many of its preparations, enters into such stable combinations, as in the case of ferro- and ferricyanides, as to be entirely inert. Further than this, Fraser believes that while the cacodylates are feeble, they cannot be considered harmless, as he found that they disturbed the alimentary canal and produced so strong a garlicky odor of the breath as to be highly repugnant to most patients. While it has been known that the best results have followed the hypodermic injections of the cacodylates, it is also to be remembered that the prolonged employment of a drug hypodermically is always to be avoided if possible, and according to Fraser's experience, even the hypodermic use of the drug did not avoid gastric or intestinal disturbances.

THE SURGICAL TREATMENT OF STERILITY IN THE MALE.

It has long been known that in a certain proportion of sterile marriages, variously estimated at from five to twenty-five per cent, the cause of sterility is dependent upon the absence of spermatozoa from the semen of the husband, and that this absence of the fruitful agent is compatible with a perfectly normal conformation, sexual appetite, and copulative ability. Studies by Pennington seem to show that even though the spermatozoa be present and motile they may be non-fertile, hence it would seem that the percentage of male sterility may in reality be much larger than would seem apparent from an estimate based on the habitual absence of spermatozoa from the seminal ejaculations.

So little is known of the minute morphology and life history of the spermatozoa that there is no test beyond that of continued motility by which sterile organisms may be distinguished from those which are fertile; it is, however, quite certain that semen from which the spermatozoa are entirely absent is absolutely incapable of causing impregnation.

The usual cause of azoöspermia is bilateral epididymitis; the great majority of inflamed epididymes again become patulous. Of this fact there can be no doubt. It is equally certain that in a small percentage of cases the obliteration is permanent. With few exceptions, the blocking occurs in the tail of the epididymis. The testicle in spite of the obstruction undergoes no nutritive change and continues to secrete spermatozoa which are apparently healthy. It seems obvious that were a communication established between the epididymis on the testicular side of the block and the vas on the urethral

side, thus switching out the obstruction, the spermatozoa should be enabled to pass into the urethra and thus sterility should be cured.

Martin, Levi and Carnett *(University of Pennsylvania Medical Bulletin,* March, 1902), experimented upon a number of dogs by cutting the vas and implanting the urethral end into the epididymis. The emissions from these dogs were swarming with living spermatozoa. It therefore seemed justifiable to perform an anastomosing operation upon man when a childless marriage was dependent upon azoöspermia consequent upon a double obliterating epididymitis.

Such an operation was completed upon a healthy young man, most desirous of children, whose wife had been subjected to dilatation and curettement before it was discovered that her husband was sterile from a bilateral epididymitis. In the spring of 1898 it was found that the semen of the patient contained no spermatozoa. There was no nodulation of the tails of the epididymes. Repeated examinations failed to show the presence of spermatozoa until March, 1901, when careful search disclosed two or three ill-formed dead ones in each cover-glass preparation. In the fall of 1901 not a single spermatozoön could be found.

On December 24, under ether, the vas of the left side was freed at about the level of the top of the testis, and by means of a sharp-pointed pair of scissors, a slender bistoury, and a grooved director, such as are used by ophthalmologists, its lumen was opened by a longitudinal cut one-quarter of an inch long. The epididymis was then approached from the outer side, and its entire length was exposed. An incision into the tail failed to show the presence of a milky fluid, though cover-glass preparations subsequently examined held a few spermatozoa in the expressed fluid. A portion of the head was then picked up in toothed forceps and excised. A few minute, yellowish drops at once appeared on the resulting cut surface, made up in the main of spermatozoa, some of which, examined fifteen minutes later, were motile. Into this wound of the epididymis, the vas was implanted with four fine silver-wire sutures carried on small-face needles from the outer surface of the vas into its lumen, thence, from the cut surface of the opening made into the epididymis, through its fibrous tunic. A suture was placed at either end of the vas incision, and the latter was held open by the two other sutures, one to either side. The skin was closed by catgut.

Semen sent for examination nineteen days after operation, and twelve hours after emission, showed motile spermatozoa, apparently healthy, but corresponding, on microscopical study, to the type observed in the epididymis of the human testis removed after death and subjected to examination.

The approach to the epididymis is not difficult, nor does it seriously endanger the nutrition of the testes by interfering with its blood-supply. The vas lies behind the spermatic artery, which sends its main branches forward to the inner side of the epididymis, anastomosing freely at this point with the artery of the vas. The portion of the vas which is to be used for anastomosis is to be carefully dissected free from its surrounding vessels and nerves, and carried to the outer side of the vascular plexus of the cord until it can be applied readily to the exposed surface of the epididymis. Because of the smallness of the structures involved, the operation is tedious rather than difficult.

As the result of his examination into the subject, Martin concludes as follows:

In sterile marriages the fault certainly lies with the husband in from ten to fifteen per cent of cases; probably in a still larger percentage.

Though absence of motile spermatozoa is a proof of sterility, their presence does not necessarily demonstrate that the semen is fertile.

Microscopical study shows that spermatozoa, though conforming to a general type, differ greatly, and even in the same individual, in conformation, size, and color reaction. In spite of these differences, it seems possible to recognize the normal and probably fertile organisms.

In their passage through the epididymis the spermatozoa undergo developmental changes so marked as to be easily recognizable; hence it is probable that the epididymis is not a mere conduit.

The prolongation of motility is a better index to fertility than the mere fact of motility.

The commonest local cause of sterility in the male is obliterating bilateral epididymitis of urethral origin. Bilateral epididymitis is comparatively rare. Permanent obliteration of the tube of the epididymis is its ex-

ceptional rather than its usual termination, and is most effectually avoided by prolonged treatment. When the obliteration persists, it is in the tail of the epididymis.

Azoöspermia resulting from obliteration in the tail of the epididymis can be easily and safely overcome by forming an anastomosis between the head or body of the epididymis and the vas. Ejaculations following this anastomosis swarm with motile spermatozoa. Whether these be fertile, and whether the vasoepididymal anastomosis will persist, can be determined only by prolonged observation.

It is interesting to note that the wife of the patient thus operated is now pregnant, having passed her fifth month.

CONSERVATIVE TREATMENT FOR THE REMOVAL OF INGESTED FOREIGN BODIES.

In this era of surgical enthusiasm, when it is even proposed to remedy cardiac valvular stenosis by a cutting operation, the report of a case of foreign body in the alimentary tract successfully removed, or rather safely forwarded, by medical means reads like an excerpt from the literature of twenty years ago. The lay treatment of foreign bodies swallowed either accidentally or intentionally has fluctuated between castor oil and mashed potatoes, with an occasional variation in the direction of oatmeal mush. This treatment, at one time adopted by the physician, has long since been abandoned for the more expeditious, brilliant, and at times equally efficacious application of the knife. It is true that there are many circumstances under which the knife is the only recourse, as, for instance, when intestinal obstruction develops and is progressive. Thus, Sharpless, because of obstructive symptoms, removed a lemon from the ilium of a negro, this fruit having been inadvertently swallowed during a moment of enthusiasm and subsequently forgotten.

In the *Medical Press* of April 2, 1902, Johnston reports the case of a man twenty years old, who, while struggling against an unruly sea, swallowed his artificial teeth. They first lodged in the back of the throat. The layman to whom the man first applied for help struck him sharply on the back. This caused great anguish and pronounced dyspnea. The latter symptom, however, was practically relieved on a repetition of the treatment with added violence. The patient was transported to the hospital in a jolting car, which caused the teeth to go further down. The pain, on the arrival of the patient at the hospital, was referred to the lower end of his sternum. Swallowing was extremely painful, though a probang readily entered the stomach, but came back bloody. This passage of an esophageal instrument, however, was followed by marked relief of suffering. In three days the site of the pain was transferred to about the pyloric orifice.

The treatment consisted in the administration of bread and butter sandwiches prepared with a thin, teased outlayer of cotton-wool in each.

Elaborate *x*-ray researches failed to show the position of the plate. This Johnston attributes to the fact that the peristaltic action was so violent that the plate was never still long enough to be photographed.

The patient remained comfortable for a number of days, when he was again seized with pain in the right iliac fossa. As the result of moderate dosing with licorice powder the plate was finally passed, enveloped in cotton-wool and feces. It weighed 95 grains, and measured 4 centimeters in length and 1½ centimeters in width. Affixed were two teeth, the right lateral incisor and canine of the upper jaw, and a long clasp for the right first bicuspid. There were indentations for the right central incisor, the two left incisors, and also a short clasp for the left first bicuspid.

Johnston modestly disclaims originality for the cotton-wool treatment for the envelopment of bodies which, from their shape or size, might reasonably be expected to cause obstruction or perforation of the alimentary canal. The remarkable fact of the case is, however, not so much the method of treatment, in itself ingenious and practical, but the fact that it was adopted by one who signs himself visiting surgeon of the Royal City of Dublin Hospital; it is, however, possible that the patient had friends and absolutely refused operative treatment.

Reports on Therapeutic Progress

PROLONGED MEDICATION, WITH SPECIAL REFERENCE TO DIGITALIS.

ABRAHAM JACOBI says in the *Medical News* of January 11, 1902, that what alcohol and ether are to the nerves, strychnine to the muscles in general, digitalis is to the heart, except in a condition of acute myo-

carditis. The increase of arterial pressure which it produces is beneficial not only to the outlying provinces, but also to the circulation and nutrition of the heart muscle itself. Thus, in all cases of general anemia, in slow convalescence where iron and nux vomica are called for, digitalis is likewise required. It strengthens the heart, propels the blood stagnating in its own fibers, and shortens the period of recovery. Dr. Jacobi has learned to look upon digitalis for restoring vigor and strength as of more than mere symptomatic value, and considers it one of the best tonics, along with iron, nux vomica, and arsenic, when given in small doses persistently.

The main effect of digitalis is the increase of cardiac contraction and of the volume of the pulse. Both are, according to Schmiedeberg, caused by the improved elasticity of the heart muscle and its more intense shortening during systole. The concomitant result is an improved action in diastole, for a heart that is thoroughly emptied during systole is better qualified to aspirate a new supply. The retardation of the heart-beat resulting from the stimulation of the pneumogastric nerve through the action of digitalis allows opportunity for the complete emptying of the ventricle with consecutive improved aspiration; in other words, the arterial blood-pressure and circulation are increased and afford the veins ample opportunity to discharge their contents. That is the effect of large doses of digitalis given once or oftener. To give big doses too often may lead to the exhibition of one or more of its bad effects, the so-called cumulation. Large doses, however, are not required for long, but many cardiac diseases demand moderate doses for moderate effect; more still require a persistent effort for the symptoms caused by anatomical lesions which cannot be removed. It is these that cause a persistent moderate incompetency of the action of the heart, which can be dealt with only by just as persistent moderate doses of the proper remedy. Years of cardiac ailment should be met by years of cardiac medication. This is intelligible to those who will be good enough to consider that insufficient metabolism and the hunger of the tissues can be treated only by persistent feeding, say three or four times daily, and not by the pouring in of a dozen beefsteaks at a time with fasting afterward.

The small doses recommended as the regular daily measure have only a moderate action on the blood-vessels. That is important to know, because large doses may contract the small arteries to such an extent as to increase the labor the heart has to undergo to overcome the increased peripheral resistance.

The indications for the use of digitalis according to the methods just indicated are the insufficiency of the heart muscle and the incompetency of the mitral valve. Chronic myocarditis is no contraindication. Large doses may overexert the inflamed muscle; that is why digitalis in large doses is very badly borne in acute myocarditis; small ones are often serviceable when the first onset is passed. Aortic insufficiency has been declared a contraindication to digitalis by some, an indication by others. These observers probably had different cases to deal with. Aortic insufficiency, when incipient or moderate, is easily compensated, gives no uneasiness to the patient, is not complained of, and is seldom observed when recent. This is the time when such doses of digitalis continued a long time prove of permanent service. Only those, however, can be thus benefited whose cases are recognized early, either accidentally or through careful self-observation by the patient. When, however, the case is old and compensation greatly disturbed, with considerable peripheral venous obstruction, even digitalis will not suffice to restore the equilibrium between the action of the heart and the capillary circulation of distant organs.

There is one form of incompetent metabolism with which we frequently have dealings, namely, chlorosis. Never treat it without adding digitalis to the iron and the mild vegetable purgative the patient is to take. Its influence on the circulation of the body in general and the heart vessels in particular is such as to improve general and local nutrition for reasons detailed before. All forms of chlorosis are benefited by it, the common as well as the severe form pictured by Virchow and Germain Sée. In this, while the heart may be normal in size but is generally of feeble structure, the arteries are small and do not provide for a sufficient organic nutrition. It will be easily perceived how the action of digitalis in small doses, persistently given, cannot help but be beneficial.

HEART STRAIN: ITS RESULT AND TREATMENT.

This interesting topic is written about by CARTER in the *Medical News* of January 11, 1902. He thinks the treatment should be prophylactic, hygienic, dietetic, and medicinal. Prophylactic treatment in civil life would require elimination of corsets and belts from ordinary dress; a quiet, well regulated life, avoiding overexertion or any exercise that would produce a profound impression upon the heart. In military life it requires such an adjustment of accoutrements and exercise as will prevent overwhelming the heart in its efforts to carry on the circulation. The proper advice to such persons is to leave the service.

Hygienic treatment involves a well regulated exercise, fresh air and sunshine, a well ordered life and avoidance of excesses in any direction, systematic bathing of such temperature and character as will not produce shock, regular meals and sufficient sleep, the avoidance of all dissipation.

Dietetic treatment is particularly needful in advanced cases. All forms of food which have a tendency to the production of gas in the stomach or intestines, and all classes of food which produce digestive disturbances of any kind, should be prohibited. The interval between meals should be of sufficient length to permit the complete digestion of one meal before another is taken. In mild and initial cases no change in the diet may be required. Where the work of the heart is excessive, liquids should be limited. Even a small amount of liquid beyond the necessities of the system may work damage by overtaxing the heart.

If blood-pressure is low, liquids should be administered to lessen resistance and increase elimination. Hence the condition of the pulse tension, the force of the heart's action, and the quantity of urine will serve as guides to the amount of liquid required. Hot water acts as a stimulant in cases of cardiac diseases resulting from strain, and not only washes out the stomach after digestion, but strengthens a flagging heart.

In cardiac asthenia when dilatation is present a dry diet is indicated. It lessens the work of the heart. If the kidney is not involved, a nitrogenous diet should be prescribed, as milk, the pulses, eggs and meat, gluten bread, almond meal, etc. If the disease is not of a severe type, other vegetables, such as onions, asparagus, lettuce, and tomatoes may be allowed. Supper should be the lightest meal of the day. If patients are thirsty when on a dry diet, hot water may be taken between meals. Sometimes milk and lime water, lemon water, or a weak solution of phosphoric acid, will afford relief and may be given. Toast, nut-foods, nuts, and fruits often act well; like dry foods, they should be thoroughly masticated. If compensation is failing and digestion is disturbed, the chief reliance is in liquid nourishment. The feedings should be small in amount and frequently repeated. Rest in bed is essential. Sudden dilatation requires rest in bed and a milk diet. Hypertrophy may require rest in bed and a non-stimulating diet. Well cooked fruits may be given. The bowels must be kept open. If hypertrophic congestion of the liver occurs, some depletion may be required, and a diet of milk or whey and soda and lime water administered.

Before medical treatment is begun the cause should be removed if possible. In the first stages little if anything more than such management as has already been suggested will be required. In cases, however, where asthenia is present, digitalis and strychnine are the most important remedies; the addition of tonics will restore the tone of the heart and reduce its rhythmic activity. The duration of the treatment must be determined by the condition of the individual case. It will depend, somewhat, upon how the organ responds to the treatment; but so long as dilatation exists, they cannot safely be stopped. If for any reason, however, these agents do not act well, some substitutes for them must be found. There are two substitutes for digitalis which may be used alternately with that remedy, or in place of it, as circumstances may demand; these remedies are convallaria, strophanthus, and in some cases caffeine. Sometimes it may be found necessary to substitute nux vomica and other tonics for strychnine, but in most cases strychnine may be given, though occasionally small doses may be required. For hypertrophic overaction aconite is often useful, but it should be used with great caution. Gelsemium and aconite are sometimes required as cardiac sedatives. For distress at night, belladonna, hyoscyamus, and cannabis indica are valuable remedies. Occasionally bromide of potassium or bromide of sodium and codeine may be required, though usually it is better not

to use these preparations nor opium. Tonics and digestants may be of service in some cases. The treatment is that usually required in such cardiac conditions. Complications may necessitate a modification of treatment.

NEEDLESS LAPAROTOMY.

The following abstract of an editorial in the *Medical News* of January 11, 1902, is *apropos* of an editorial which we recently printed in the GAZETTE:

Now that surgery and medicine overlap so extensively in the management of abdominal conditions, surgical findings in cases where diagnosis was at fault are especially suggestive to the medical man. There are many intra-abdominal affections whose differentiation one from another is most difficult. Appendicitis, right oöphoritis, and certain biliary affections are liable to almost inextricable confusion in complicated or somewhat unusual cases. There are, however, other pathological conditions supposedly quite distinct in symptoms that may well prove sources of error.

The hope for advance in diagnosis depends mainly on frank confession of errors and the collation of cases that will show the reasons for such errors.

While peritonitis would seem to be, as it actually is in ordinary practice, an easily recognizable condition, many an abdomen has been opened in the confident expectation of finding it present, yet the operator has been disappointed. Professor Koenig, of Berlin, an extremely conservative surgeon, exhibited a patient a short time ago before the Berlin Society of Physicians and Surgeons of the Charité Hospital on whom three laparotomies for peritonitis had been done, in every instance to disclose an absolutely normal peritoneal cavity. The patient was a man, and had some method by which his abdomen became tympanitic and his countenance took on the anxious expression characteristic of peritoneal inflammation, while he complained of all the subjective symptoms of the affection. Successive operators had found the old abdominal scar, but considered this an accessory indication for laparotomy, since a second abdominal operation is proportionately more frequently necessary than a first one.

Where stigmata of hysteria exist, or where, as in one of Dr. Munro's cases, the morphine habit is present, the possibility of simulation of what are ordinarily urgent surgical symptoms must be borne in mind. It is of extreme importance in our day of justifiable surgical readiness to do abdominal work to be reminded that acute nephritis may so readily simulate appendicitis or surgical conditions in the biliary tract. For this kidney affection laparotomy can do no good, and the effect of the operation will probably work serious injury. The exclusion of nephritis, then, in doubtful cases is absolutely demanded.

Two recent suggestions in kidney surgery —Dr. Reginald Harrison's splitting of the capsule for the acute congestion he picturesquely described as glaucoma of the kidney, and Dr. Edebohl's establishment of a new circulation through adhesions in chronic nephritis—must be borne in mind. At times inevitable laparotomies for symptoms whose basis is the kidney may thus prove not to have been needlessly done.

While there are needless laparotomies frequently performed, there is no doubt that true conservatism will in the future lead to the performance of more rather than fewer abdominal operations. Many patients still die every year because of failure to attempt surgical relief in suitable cases. The frank report of errors will lead to a better state of mind and a surer diagnosis. Exploratory laparotomies may remain, in Dr. Manges' expressive phrase, the "most dangerous of operations," because of the uncertainty involved, but the domain of uncertainty with regard to the indications for surgical interference will be constantly narrowed by the collation of actual experiences. No one is infallible, least of all in the applications of the eminently fallible principles of applied medicine, but we may rise on stepping-stones of past errors to higher things.

FEEDING IN ENTERIC FEVER.

BRUMMIT tells us in the *Australasian Medical Gazette* of December 20, 1901, that if called upon to treat a case of enteric fever, in which the patient has high temperature, headaches, much furred or dry tongue, and perhaps delirium at night, frequent small drinks of milk (probably with water or soda water, or peptonized) should be given, and in so doing should satisfy the needs and the desires of the sufferer. If the case runs a severe course, milk in some form will prob-

ably be the staple article of food; perhaps mixed with lime water or barley water. Two or three pints of good milk a day will, as a rule, be sufficient; if well diluted there will be less likelihood of the formation of large indigestible curds in the stomach, and thirst will be allayed. Milk may be supplemented by clear broths, egg-albumen with water, and a cup of tea or coffee, cocoa or chocolate, with milk occasionally. Milk is very distasteful to some patients; variety is often useful as well as grateful to those who tire of milk.

When the severity of the case has subsided to some extent, or in some instances almost at the outset, a desire for stronger food will often be expressed, and occasionally the demand will be very urgent. Authorities recommend the attendant to be inexorable; he must close his ears to the clamor of adults and the cries of children. The author differs from such authorities, and accepts the cry of nature in this matter as a fairly safe guide.

In any case in which the tongue is moist and clean, in which there is no diarrhea, and in which there is a distinct desire for food, it should be assumed that the digestive powers are in fair working order, and they should be given employment. When the digestive power of the stomach is good, as it often is, a mutton chop, an egg, a banana, or a cup of milk would reach the cæcum in very much the same form. Commence with light farinaceous foods and bread and milk, and go on to minced meat, mashed potato with milk or gravy, custard, lightly boiled egg with bread-crumbs or thin bread and butter, boiled white fish or fowl, brain, rice in various forms, junket alone or with stewed fruit, from which skin and hard particles have been removed. Many patients appreciate a cup of coffee or cocoa at bedtime, and rest contentedly after it.

Some vegetable is desirable, especially in protracted cases. Onions or carrots may be used in the preparation of soups, but it may be well to remove solid portions; a small quantity of orange or lemon juice occasionally may also be useful. The author sometimes prescribes a baked apple and very frequently stewed fruit, with advantage to his patients, never to their disadvantage. He never prescribes concentrated meat extracts, and very rarely proprietary foods of any kind. The nutritive value of freshly prepared foods, if properly made, is superior to that of the materials imported in condensed form, however largely they may be advertised.

Whatever food may be used, watchfulness as to the evacuations must be constant. If undigested food be passed, a change should be made in the character, form, or quantity of food. Undigested milk is most frequently reported, as might be expected, for milk is, and is likely to be, the staple food of enteric fever patients, and is frequently used in excessive quantity.

In favorable cases the desire for food usually arises before the temperature becomes normal; in such instances the author nearly always complies with the request for food. In prolonged cases, in which the patient becomes very thin and weak, he looks upon the craving for food as a harbinger of good. There may be serious ulcerative changes in progress or threatening; if so, the maintenance of nutrition is especially important. The author thinks with regret of some such cases in years past, in which a stricter dietary was observed, and in which results were unfortunate. In every case "fed" patients recovered.

He is not an advocate of indiscriminate use of strong food in enteritis; adherence to milk diet would be immensely better than that, but the judicious use of a large dietary scale in many febrile cases and in nearly all convalescents he believes to be good practice. In cases which can be generously fed, waste of flesh and strength is avoided and restoration to health is facilitated. A careful study of the ninety-eight cases he summarizes has led to the conclusion that the well-being of the patients generally was favored by the use of extra foods, and that no material disadvantages resulted from their administration.

THE TREATMENT OF PERICARDITIS.

In the *Journal des Praticiens* of January 18, 1902, DEGUY makes the following statements in regard to interference in cases of pericardial effusion. He first begins by stating that paracentesis of the pericardium is only indicated when the accumulation of fluid is so great as to be a menace to life and to cause unduly feeble contractions of the heart, with a filiform pulse, precordial distress, and evidences of suffocation. When pus is present, these symptoms may be associated with great variations in temperature, profuse sweats, and chills, and under these

circumstances pericardiotomy should be performed to permit the escape of the purulent fluid. Puncture of the pericardium is therefore to be considered as an operation of urgency, and the gravity of the prognosis depends not so much upon the operation itself as upon the nature of the disease, the state of the heart, and the general condition of the patient. Deguy asserts that the puncture is without danger in cases of serous pericardial effusion such as is met with in rheumatism. Different authors advise different points for operation. The third intercostal space on the left of the sternum has been recommended by Stevenson, Mader, Loebel, and Schuh, and puncture of the fourth interspace is recommended by Trousseau, Pirogoff, and Guerin; in the fifth interspace by Baizeau, Aran, Bouchut, and Raynaud; operation in the sixth interspace is recommended by Delorme and Mignon, Hare, Woinitch, and Sianijentzky. Still other investigators believe in puncturing at the right side of the sternum in the fifth interspace. Undoubtedly the exact point of puncture depends somewhat upon the physical signs of the disease which are present. The method of relieving the serous effusion varies, but probably the safest is to make an incision through the skin and subcutaneous tissues until the pericardium is approached on the left of the sixth interspace. Through this the trocar is gently pushed and the fluid removed.

Pericardiotomy is not justified except in the presence of pyopericardium, which arises either as the result of injury or follows infection of the pneumococcus or other microörganism. Ollier recommends that an incision be made at the left of the sternum and that the fifth cartilage be disarticulated. At this point it will be found that the pleura is intimately adherent. After the pleura is pushed aside, puncture of the pericardium may be readily accomplished. Still another method consists in resection of the xiphoid cartilage with subsequent incision of the distended pericardial sac. Trephining of the sternum for the purpose of entering the pericardial sac has now been abandoned.

GOUT: OBSERVATIONS ON ITS PATHOLOGY, FORM, AND TREATMENT.

The *London Practitioner* for March, 1902, contains an excellent article by that well known authority on gout, Dr. LUFF. He speaks as follows of the use of alkalies and the salts of alkalies:

Of the potassium salts used in the treatment of gout, the citrate and the bicarbonate are the two most commonly employed. As to the beneficial effects of employing a potassium salt in conjunction with colchicum in the treatment of acute and subacute gout, in the author's experience of the various potassium salts the citrate is the most useful. If given in sufficiently large doses it tends, by its conversion in the kidneys into the carbonate, to diminish the acidity of the urine, which is generally high in connection with the gouty paroxysm, while at the same time it increases the solvent power of the urine for the uric acid salts, and so assists in their elimination. In addition, as the writer has experimentally shown, the presence of a potassium salt both delays and inhibits the conversion of the soluble gelatinous sodium biurate, which is the form in which the biurate is first present in the blood, into the comparatively insoluble crystalline biurate. In this way the deposition of the latter in the tissues is inhibited, and so further time for the elimination of the biurate is offered. It is not contended, however, that the above mentioned are the only explanations of the beneficial action of potassium salts in the treatment of gout. In addition they have their uses in the gouty state on account of their stimulating action upon metabolism, of their remedial action upon the gastric and hepatic functions, and of their diuretic action.

Concerning the use of sodium salts Burney Yeo, in an able defense of the employment of sodium salts as hepatic stimulants, refers to Dr. Luff as a supporter of the doctrine that sodium salts are injurious to gouty persons. He claims to have never supported so sweeping a doctrine, but he has insisted that, owing to the fact that sodium salts are directly detrimental to the removal of gouty deposits, those mineral waters should be avoided which owe their activity to these salts, when the removal of deposits is the main object of treatment. That he is not a supporter of the universal doctrine that sodium salts are injurious to gouty persons is manifest from the following quotation from his book on the Pathology and Treatment of Gout: "In cases of sluggish action of the liver, of gastrointestinal catarrh and torpor, of gouty dyspepsia, and of other forms of irregular gout where there

are no appreciable uratic deposits in the joints, mineral waters containing sodium salts are undoubtedly beneficial, owing to the action of those salts as hepatic and gastrointestinal stimulants."

As regards the use of lithium salts in the treatment of gout, his opinion is that they are not so useful as the potassium and sodium salts. The lithium salts have not the same inhibiting effect on the conversion of the gelatinous sodium biurate into the crystalline form as the potassium salts have, while at the same time they have no better solvent effect on gouty deposits. The great objection, however, to the use of the lithium salts is their greater toxicity and depressing action on the heart as compared with the potassium salts. They consequently have to be given in such small doses that the author is very doubtful whether in such doses they possess any remedial effect at all. On the other hand, he constantly meets with patients suffering from cardiac depression as the result of the excessive and continued consumption of lithia tablets, which are so persistently, so speciously, and so wrongly vaunted as curative of gout.

In the treatment of the gouty state associated with disturbance of the functions of the liver, the most important consideration is the restoration of that organ to its normal state of activity, and here the alkaline sodium salts are especially useful. There is no better treatment at the outset than a dose of blue pill or calomel at night, followed by a dose of Epsom salts or Carlsbad salts in the morning. Subsequently a pill containing a small dose of blue pill or calomel combined with euonymin and colocynth will be found most useful. In such cases of gouty hepatic inadequacy a mixture which the author has found most beneficial as regards its stimulating effect on the metabolism of the liver, and also of the gastrointestinal tract, is one containing sodium bicarbonate, gentian, and nux vomica, taken a quarter of an hour before meals.

GENERAL REMARKS ON ASYLUM DYSENTERY AND ITS TREATMENT BY INJECTIONS OF PERMANGANATE OF POTASH.

The *Lancet* for March, 1902, contains an article on this important subject by MacDonald. He says that during the autumn of 1899 and the spring of 1900 dysentery appeared in the Dorset County Asylum, and while the cases were not numerous, yet they were sufficient in number to cause inconvenience and anxiety. Starting on the female side, the cases were of the usual well known type and character, and the number of severe attacks were in about the same proportion. After a time, and when there were no cases in the women's wards, cases began to appear on the male side, and these, if fewer in number, were more severe than among the women. At this time the ordinary therapeutic remedies were employed, and in a few cases injections of a solution of nitrate of silver were tried, but the results were most discouraging. As far as practicable the cases were isolated, and the complaint disappeared, only to reappear again in the winter of 1900. It was during this second outbreak that the use of injections of permanganate of potash was resorted to. As soon as the case was diagnosed to be one of dysentery, the lower bowel was washed out night and morning with a weak solution (from two to four grains to the pint) of permanganate, the instrument used being an ordinary enema syringe. The motions rapidly lessened, and seldom had the treatment to be prolonged beyond the third day. In every one of the cases—and several of them were severe—the patients recovered. Not only was the treatment successful, but by the early and judicious use of the injections the outbreak was cut short.

At the time doubts were entertained as to the value of the treatment, but after a further experience these doubts were removed, and now every case of a dysenteric nature or of severe diarrhea is treated by this method. In each instance recovery has followed the treatment. Apparently the permanganate acts in its double capacity of a disinfectant and a styptic. In the more severe cases milk as an article of diet was found to be unsatisfactory. It was not only rejected, but it increased the intestinal irritation. This is not an uncommon experience. The main article of diet used was a mixture of special beef tea and specially prepared rice, together with a liberal allowance of port wine. To insure success the treatment should be commenced early, and thoroughness is an essential precaution.

In one case only after the permanganate treatment had been adopted has there been an opportunity of examining the bowel post mortem. This was the case of a demented melancholiac who had a very severe attack of dysentery from which she made an ex-

cellent recovery. The injections were continued for five days, and the patient was quite convalescent in three weeks. Soon afterward she developed acute double pneumonia, to which she succumbed. At the necropsy the mucous membrane of the rectum showed numerous healed ulcers, so different from the ulcerated congested state of the bowel in fatal cases from dysentery. Two classes of patients—the tuberculous and the general paralytic—invariably give bad results. The reason is too evident to need any explanation.

While the author's experience of the permanganate has not been extensive, he thinks it has been sufficient to warrant the results being made known, and is hopeful that this short paper may be the means of inducing others to try the treatment as opportunity occurs.

SOME REMARKS ON THE USE OF ADRENALIN AS AN ADDITION TO SOLUTIONS FOR LOCAL ANESTHESIA.

An article is published by ELSBERG in *American Medicine* of March 1, 1902, which calls attention to the value of this important substance.

He wishes the profession to realize the value of adrenalin as an addition to solutions for local or infiltration anesthesia. Adrenalin, the discovery of Dr. Takamine, is described as an "almost non-poisonous crystalline substance, the active blood-pressure-raising principle of the suprarenal gland. It is a light, white, microcrystalline substance, readily soluble in hot water. It is a powerful astringent; a fraction of one drop of an aqueous solution of adrenalin or one of its salts, in the strength of 1 to 10,000, blanches the normal conjunctiva within thirty to sixty seconds."

Adrenalin chloride solutions are now on the market. "They are already much used by the laryngologists and rhinologists as a hemostatic application, for the relief of nasal congestion, as a diagnostic aid, and for the continuous treatment of acute inflammatory affections of the accessory sinuses of the nose."

If one drop of the 1:1000 solution of adrenalin chloride is injected under the normal skin a slight burning sensation is felt, but no anesthesia occurs. Within one minute an area of skin about two inches in diameter becomes blanched and almost bloodless, and remains so for from five to twelve hours. The same effect will be observed if a 1:5000, a 1:10,000, or a 1:15,000 solution is used, but with these weaker solutions the blanching of the tissues appears only after a few minutes, and disappears after about three to six hours. After the blanching of the skin has disappeared the tissues apparently return to their normal condition. The injections of the adrenalin solutions were made under the normal skin of the forearm a considerable number of times, but no deleterious effects, such as sloughing or secondary ecchymoses, were ever observed. In the course of these investigations eucaine and cocaine solutions containing adrenalin chloride in the proportions of 1 to 5000 to 1 to 20,000 were injected under the skin of the forearm. It was found that the anesthetic properties of the eucaine and the cocaine were perfectly preserved, while the adrenalin caused the same anemia and blanching of the tissues that had been observed after injections of the pure adrenalin solutions. The blanching of the tissues extended for from one to two inches beyond the area infiltrated, and remained for the same number of hours as when the plain adrenalin chloride solutions were used. During the past four months the author has made it a practice to add adrenalin chloride in the proportion of 1 to 5000 to 1 to 20,000 to the solutions of eucaine or cocaine used for local anesthesia, and has used these solutions in a number of minor operations, such as the incision of abscesses and furuncles, and the excision of sebaceous cysts, nevi, small enlarged lymphatic glands, and the like. The amount of bleeding that occurred was remarkably small; it was often so slight tha it was unnecessary to sponge off the wound a single time.

Only the larger blood-vessels bleed when they are cut across; the smaller vessels are so tightly contracted by the adrenalin that no blood can escape from them, and therefore no oozing. As mentioned above, the adrenalin interferes in no way with the anesthesia of the infiltrated area. In none of the patients operated upon did even the smallest secondary hemorrhage occur, nor was there any bleeding observed under the skin or at the site of the operation when the first dressings were removed. On purely theoretical grounds it was expected some secondary bleeding might at times take place; for with the relaxation of the blood-

vessels six to twelve hours after the injection of the solution it was thought some bleeding from the larger of the vessels would occur. This, however, was never noted, although attention was drawn to the fact that the patients thus far operated upon are relatively few in number, and in all of them it was possible to make firm compression of the wound with bandages. What would be the result in the larger and deeper wounds that must be made in major operations, such as herniotomies and the like, cannot as yet be stated. The author has not had the opportunity to test the adrenalin-cocaine or adrenalin-eucaine solutions in such patients, as a fitting case has not yet presented itself. Clinical experience must teach us whether adrenalin may be used in major operations under local or infiltration anesthesia or not, but experimentation along this line must be circumspect and guarded. In one case of removal of a small sebaceous cyst from the scalp, a small slough formed in the wound after the operation, but it is more than doubtful whether the adrenalin contributed to or was the cause of it. In more than thirty other clean operations the primary union was in no manner interfered with nor delayed. The writer's experience up to the present time does not allow him to state finally that the addition of this minute quantity of this very powerful astringent may not, in rare cases, have some effect upon the healing of wounds.

The experiences with adrenalin recorded above have convinced Dr. Elsberg that the addition of adrenalin chloride in the proportion of 1-to-5000 to 1-to-20,000 solutions, for local anesthesia, has a distinct value in minor operative surgery in that it almost entirely does away with the oozing of blood from the wound. As adrenalin is a cardiac stimulant, it has the additional advantage that it will counteract the depressing effect of the eucaine or cocaine, and because it keeps the local blood-vessels firmly contracted for a number of hours, it will prevent the congestion, and hence the pain which is so apt to follow soon after the anesthetic effects of the eucaine or cocaine have worn off.

Adrenalin chloride can be obtained in a sterile condition in the form of 1-to-1000 solution. Of this solution the required amount should be added to a sterile solution of eucaine, cocaine, or Schleich mixture just before it is to be used. The best results can be obtained with solutions which contain 1 to 5000 to 1 to 10,000 of adrenalin chloride. If the quantity of injected solution has to be a large one, it will be advisable to use a 1-to-15,000 to 1-to-20,000 solution.

THE TREATMENT OF INTERSTITIAL NEPHRITIS.

MORIARTA, in the *Albany Medical Annals* for March, 1902, writes optimistically on this subject. He says that a few drugs, such as the iodide of potassium, mercury, either as the bichloride or calomel in small continuous doses, and tincture of muriate of iron, associated with the proper prophylactic measures, are useful in conditions of chronic nephritis before organic changes become marked. It is well to have the possible etiology of the disease in mind when determining the drugs to be used at this time: to wit, if syphilitic, the iodides and mercury are useful; while if it is of a gouty origin, the alkalies, colchicum, iodide of iron, and our local alkaline mineral waters are of much use. If due to metallic poisoning, the iodides come in again; while if associated with arteriosclerosis, nitroglycerin, chloral, or bromides are of value (and in this particular condition opium in some form has been suggested). The anemia has been found to be many times improved by the use of our local iron waters.

When an exacerbation occurs with mild uremic symptoms, the patient should go to bed at once, and the bowels should be relieved by some saline cathartic, preceded or not by calomel, as may be determined. While the room is to be well ventilated, the slightest chilling of the surface of the body is to be avoided. A milk diet should at once be instituted, and quantities of water given at regular intervals, either hot or cold, though hot water is better, and ice water never should be given. If the secretion of urine is scanty, cream of tartar water is of great service (one drachm to one pint), with lemon juice, as are also vapor baths. The condition of the heart and vessels should at once be determined to decide what, if any, drugs are indicated; at this time we must always have in mind the physiological action of such drugs, as digitalis, strophanthus, strychnine, and nitroglycerin. If the attack does not clear up, the secretion of urine becoming less and edema present, we must act quickly, or we will have coma and

death, with or without convulsions. The heart must be carefully looked after, because in cases of suppression of urine there is a secondary heart failure, often with dilatation, which calls for the cardiac stimulants mentioned—*i. e.*, digitalis, strophanthus, strychnine, and caffeine. Drastic purgatives, such as ten grains of calomel followed by thirty grains of compound jalap powder, are of use. The patient is to be placed in a wet blanket surrounded with hot water bottles; or with a little ingenuity, heat can be conducted under the bedclothes from a lamp. In the winter season if steam is available it may be utilized in the same manner. This will usually start a sharp diaphoresis. Many practitioners at this stage employ pilocarpine hypodermically, but personally it is the one drug of which the author is afraid, and seldom uses.

This treatment and the diaphoresis must be continued for several hours, until the kidneys commence to act, if the patient is to be saved. When this process is finished, the patient should be carefully placed in fresh, warm blankets, and rubbed dry with considerable friction to tone up the cutaneous circulation. If this is not done the patient will be left in a weak, sensitive condition, liable to take cold upon the slightest exposure. If convulsions occur, chloroform should be inhaled, morphine given hypodermically, and chloral by the rectum; if the right side of the heart is engorged, a few ounces of blood from the arm may help.

NEURASTHENIA: ITS ETIOLOGY, SYMPTOMATOLOGY, AND TREATMENT.

ROCKWELL, so well known for his advocacy of electricity as a remedy for diseases, advises in the *International Medical Magazine* for February, 1902, the following plan of treatment:

One of the first questions to be decided is, Shall he work or rest? Both are of value, but they must be differentiated. To recommend activity to the case that demands rest, and rest to the one who should be active, is most pernicious advice. Rest is demanded in certain cases of neurasthenia attended with cerebral excitement, and especially where physical exhaustion follows cerebral excitation, due to slight external emotional causes, and also perhaps in most cases of myelasthenia. The physical causes that suggest rest are malnutrition and emaciation, old age, conditions of anemia, and those distressing and disabling motor and sensory symptoms associated with, and the result of, spinal exhaustion. In a very general way, it may be said that rest is for acute cases, those that are susceptible, congestive, while work is for chronic and apathetic cases, for the dull and sluggish. In all acute psychoses there is a cerebral hyperemia which exercise aggravates.

Mental therapeutics is without doubt an important factor in many neurasthenic cases. Neurasthenia is, however, no imaginary disease, and no appeal to the imagination alone will overcome the profound loss of nerve tone characteristic of the disease, nor rearrange the delicate fibrillary connections of the neurons disturbed by the constant impact of psychical forces. The physician must have the confidence of his patient, and this he can have only by recognizing his infirmities and treating them with consideration, sympathy, and respect. Then, by gently encouraging the patient and urging him to bring his intellectual forces to bear upon his abnormal emotions, the morale is reënforced and substantial aid afforded.

We cannot well get along without judicious medication. The weak and erratic nervous system must be temporarily sustained and soothed while the patient is profiting by the slower processes of hygiene and external methods of treatment, such as electricity, hydrotherapy, and massage. On some one of the various bromides, including the bromide of zinc, either alone or in combination with belladonna, cannabis indica, etc., according to individual idiosyncrasies, it has been customary with the author to rely more confidently than upon most other combinations.

With the writer's experience with many hundred cases of neurasthenia, he believes there is no single remedy that quite equals electricity. If it be true that neurasthenia is a disease of exhaustion, of impaired nutrition, then theoretically electricity ought to be of service, since as an aid to nutrition its position is sufficiently assured; and practical experience certainly teaches one that electrization is altogether the most powerful means at our command in the final restoration of perverted cellular nutrition. The neurasthenic appears as a rule to be well nourished; he frequently gains weight; his

color is good, and his appetite often first-class. But is he well nourished? How can he be well nourished with a nervous system so erratic and unstable that the slightest influence is sufficient so to disturb the vasomotor equilibrium as to cause a general nervous disturbance, manifested in the flushed face, perspiring hands, dizziness, and perverted vision? The neurasthenic is not only not well nourished, in the true sense of perfect nutrition, but he often suffers from toxic influences, which may be both a cause and a result of the undoubted malnutrition of the nerve cells. Our experience teaches us that there is no remedy to the effects of which there is a more varying degree of susceptibility; and especially with neurasthenics, a well kept record of cases will show a most remarkable variety of conditions. Consider, for example, the difference in susceptibility to the galvanic current. There are cases in which anything over ten or fifteen milliamperes on any part of the body seems to provoke irritability, while one-half this strength applied to the head becomes decidedly disturbing. On the other hand, there are neurasthenics whose very disease seems to make them equal to the endurance of unusual strength of current, which it is found necessary to decrease as improvement progresses. These remarks apply to other manifestations of electricity.

Static electricity is especially valuable in conditions of disturbed circulation resulting in local congestion. The kidneys often suffer, and the author has recorded a number of cases in which albumin and casts have appeared, consecutive to long-standing neurasthenia of this type, and speaks highly of the action of static electricity in these conditions. The circulation is equalized, and especially as a tonic and sedative its good effects are not slow in manifesting themselves. In connection with prolonged applications of the high-tension induction current over the kidneys, the disappearance from the urine of both albumin and casts has in several instances been observed. Not only does electricity directly influence nervous action through the vasomotor system, but it excites vital function by action directly on the cell itself and on the protoplasm, thus hastening nutritive changes and cellular activity.

In still another way may electricity influence neurasthenia and hysterical conditions. Pathologic conditions show that conductibility of the neuron may be complete or incomplete according to the degree of the permeability of the nervous tract. If the nerve current can pass, it is translated into sensation, movement, intelligence. If it cannot pass, and there are no gross structural changes, we get a variety of the functional neuroses. On theoretic grounds, and because of practical results, the power of electricity can hardly be questioned, and especially when used in the form of static vibratory potentials or waves, to greatly aid in restoring the interrupted conductibility of the nerve tracts.

THE DRUG TREATMENT OF NEURASTHENIA.

BROWER reminds us in the *International Medical Magazine* for February, 1902, that this is an age of therapeutic skepticism. Many doctors learned in diagnosis and pathology have no faith in the curative power of drugs. One of the most learned of our profession, in his admirable text-book on the Practice of Medicine, speaking of this disease, says: "Treatment by drugs should be avoided as much as possible." The writer does not belong to this class, and therefore gives his neurasthenic patients drugs freely, and with benefit. It is an autotoxic and exhaustional neurosis, and therefore requires, first, eliminants. The bowels, kidneys, and skin are usually all below the standard of healthy activity, and the careful physician will not depend upon the statement of the patient for the state of this activity, but will investigate fully each of these emunctories for himself.

A prescription to promote the bowel elimination is:

℞ Extracti aloes, gr. viij;
Extracti taraxaci, gr. xvj;
Pulv. ipecacuanhæ, gr. j;
Ext. hyoscyami, gr. viij.

M. ft. in capsul. No. viii. Sig.: One at bedtime.

This pill is a stomachic tonic, a mild diuretic, as well as a gentle laxative. The dose of this should be regulated so as to produce one soft stool daily. The bowels should be washed out once or twice a week with a high enema of normal saline solution.

To promote renal elimination potassii citras in doses of grs. v to xv before meals, combined with adonis vernalis, is efficient:

℞ Potassii citratis, 3v;
Ext. adonis vernalis, fl., f3ss;
Aquæ aurantii, ad f3iv.

M. Sig.: One teaspoonful before meals in hot water.

Improved elimination through the skin is best promoted by massage and static electricity.

It is essential to establish as thorough an elimination as possible by bringing these several important systems up to the standard of health, before resorting to tonics. This is frequently overlooked.

The exhaustional side of neurasthenia is to be combated by the combination of alteratives and tonics. The alteratives preferred are gold and guaiac, and a favorite formula is:

℞ Auri et sodii chloridi, gr. j;
Pulv. res. guaiaci, gr. 100.

M. ft. in cap. No. xx. Sig.: One a half-hour before meals.

These drugs should be rubbed together dry and put in capsules.

The blood should be examined in every case, especially to determine the percentage of hemoglobin, and iron given or withheld, as may be indicated by this. The best preparation of iron is Blaud's mass, freshly prepared and rubbed up dry, and with this may be combined nux vomica and arsenic in small doses, as follows:

℞ Ferri sulphatis (exsic.), gr. xl;
Sodii carbonat. (exsic.), gr. xl;
Ext. nucis vomicæ, gr. iij;
Sodii arsenatis, gr. j.

M. ft. in cap. No. xx. Sig.: One after meals.

Objection has been made by some to the use of nux vomica and its alkaloids in neurasthenia, and the author agrees that it does harm in large doses, and in those cases in which elimination has not been sufficiently established. When the hemoglobin record has improved so that iron is no longer necessary, phosphorus will be of service. This may be given as the zinci phosphidum, gr. 1-10, or as calcii glycerophosphas, gr. v, or as a syrupus hypophosphiti, U.S.P., f3j, after meals. Of these several drugs, the calcii glycerophosphas is preferable.

Nerve sedatives will be necessary from time to time, and for this purpose sodium bromide is used:

℞ Sodii bromidi, 3vj;
Essenciæ pepsini, ad f3iij.

M. Sig.: One teaspoonful in water as necessary.

To this may be added sometimes with advantage the phosphate of codeine in small doses. Those nerve sedatives should be used only occasionally, and for the temporary effect, because it is easy to lead these patients into a drug habit.

Insomnia will be a prominent symptom in some cases. It should be combated with drugs, if possible, but if not, then the combination of chloral and bromide of sodium is much superior to any of the newer preparations:

℞ Chloralis hydratis, 3iv;
Sodii bromidi, 3iv;
Ext. glycyrrhizæ, fl., f3ij;
Aquæ, ad f3ij.

M. Sig.: One teaspoonful in water at bedtime. Repeat in one hour, if necessary.

While this general plan of treatment should be continued, yet the particular drugs to be employed may be frequently changed with benefit to the patient.

FEEDING IN GASTRIC ULCER.

BRUNTON, in the *British Medical Journal* of March 1, 1902, reminds us that in cases of gastric ulcer we begin by giving the patient rest in bed, with feeding by the rectum for a few days, then careful feeding by the mouth while we still continue rectal feeding. The first food given is generally milk in small quantity—a tablespoonful of milk with a tablespoonful of lime water every two hours. We gradually diminish the lime water, at the same time that we increase the proportion of milk, as the patient will bear it for several days more. Then we may try the effect of custard, which is very mild and non-irritating. Then we may give the patient pounded fish, and perhaps pounded chicken next day. We may at the same time give some chocolate, which is very well borne, and makes a great change in the patient's diet, which is otherwise very monotonous and tasteless. Then we give some of the various foods.

Here the author calls attention to one other little point which presents itself, because nearly all those various foods consist of starch and dextrine in a certain proportion. Take some starch and put it into hot water, and we see what a mess we make of it, because it goes all into lumps, and will not make a smooth paste. But if the starch is beaten up with a little cold water, and then put in hot water we get it into a paste-like, thickish cream. Then add boiling water to it, and we will get a fine paste.

When we are dealing with starchy foods, we must treat them like starch—that is, make them into a paste with cold water first, and then add hot water afterward.

Lastly, one word about bread. The digestibility of bread, like that of meat, depends to an enormous extent upon the way in which it can be broken up in the intestine. The author then takes a piece out of the middle of a breakfast roll, of very good quality, and kneads it up. It forms a firm, putty-like mass, and if we were to put it into pancreatic juice, we would see how little would be absorbed. Then he takes some stale bread, and crumbles it up easily, from which we are able to appreciate the advantage of the latter over the former. The stale bread is broken into a fine powder, but the new bread forms an indigestible lump.

PRACTICAL USES OF OMENTOPLASTY.

Having to deal with a large gastric ulcer, HERMES (quoted in *Interstate Medical Journal,* January, 1902) found, after his sutures carefully applied tore out, that there was nothing to do but to sew the omentum to the edges of the stomach wound. The result was as good as if the stomach wall had been closed in the usual way. He had similar success in a case of pyloric carcinoma adherent to the abdominal wall, where a six-centimeter rent complicated the separation of adhesions. A most remarkable case was that in which a large cystic tumor was removed from the pouch of Douglas; here was found a large perforation into the rectum, situated too deeply for suturing. It was covered with omentum, over which a gauze pack was placed, and there was healing without a fistula resulting.

APOMORPHINE HYDROCHLORATE IN ALCOHOLISM.

COLEMAN and POLK, in *American Medicine* of March 8, 1902, reach the following conclusions as to the value of apomorphine in the treatment of alcoholism:

1. To obtain a hypnotic action with apomorphine it should be given hypodermically.

2. The dose cannot be fixed. It is best to begin with a small dose—1-40 grain or less—and to repeat this or give a slightly larger dose within a short time. Further doses should not be given after vomiting occurs, until several hours have passed.

3. Doses repeated in two or three hours have but little beneficial effect.

4. The administration of apomorphine should not be repeated in patients who are weak.

5. The duration of the hypnotic action is only a few hours, and when the patient awakes his condition is practically unchanged, except in "ordinary drunks."

6. The best results are obtained from apomorphine when it is followed in two or three hours by some recognized hypnotic, as bromide, chloral, paraldehyde, etc.

7. Solutions of apomorphine are unstable and should be freshly made for use. Old solutions should never be used.

8. Apomorphine may be employed as a hypnotic in selected cases of alcoholism. The best results were obtained in "ordinary drunks" and in cases verging on delirium tremens. But in some of these cases the drug has no effect whatever.

9. The administration of apomorphine to patients in delirium tremens is, in the writers' experience, without beneficial results, and may even be attended with danger from its depressing action.

The above analysis represents in the main the results obtained with apomorphine in all the 300 patients presenting alcoholism to whom the drug was administered.

THE CARE OF OPHTHALMIA NEONATORUM.

In the *Medical Standard* for April, 1902, WOOD and WOODRUFF advise the following plan of treatment for this dangerous affection. They well emphasize the fact that in such a virulent inflammation, which is attended in many cases with results so disastrous, its prophylactic treatment is of great importance. In these days of antiseptic surgery there is less danger of the child's eyes becoming infected than formerly. Where a discharge is known to exist, regular daily cleansing of the vagina with an antiseptic solution before parturition should always be carried out. After the birth of the child the lids should be wiped dry with a piece of sterilized gauze, the lids should be carefully opened, and with a sterilized medicine dropper one drop of a two-per-cent solution of nitrate of silver should be instilled into the conjunctival cul-de-sac of each eye. This is according to the method of Credé, which if carefully carried out will greatly minimize the danger of infection.

By this method Credé reduced the percentage of cases occurring in the Leipsic Hospital from about 10 per cent to 0.2 per cent. Similar results have been obtained by others.

Cleanliness is the all-important factor in the prevention as well as in the treatment of such an inflammation after it has developed. Even if no vaginal discharge is present the child's eyes should be carefully looked after, not only at the time of but for some time after birth, and the cleansing with sterilized water, or perhaps better still, with a mild antiseptic solution such as a saturated solution of boracic acid, will in many instances prevent much suffering. The attention of the nurse and the attendants should be drawn to the necessity for carefully cleansing their hands, using nothing but towels, or better still, gauze that has been properly sterilized, when wiping the infant's lids.

When the inflammation has actually set in, frequent irrigations and cleansing (when the lids are hard and tense and the discharge is not profuse) of the conjunctival cul-de-sac should be carried out. A fountain syringe should be filled with an antiseptic solution warmed to about 104° F.

Acid boric, 40 grains;
Sod. bicarb., 40 grains;
Solution hydrarg. bichlor. (1:10,000), 4 oz.

The lids should be everted and the upper and lower cul-de-sacs thoroughly irrigated with the solution, stopping from time to time to wipe away with pledgets of sterilized cotton any discharge adherent to the conjunctiva. This should be repeated every hour or two according to the severity of the case. Care should be taken when irrigating that the nozzle of the irrigator does not touch the cornea, or that the stream does not directly irrigate the corneal surface on account of the danger of scraping off a portion of the corneal epithelium, thus inviting infection of the cornea, the formation of an ulcer, and the loss of the eye. If a fountain syringe is used it should be elevated not more than three inches above the level of the child's face (placed in a recumbent position), the nozzle of the irrigator being held about half an inch from the eye. In this way the upper and lower cul-de-sacs are gently washed out without danger of injury from too powerful a stream. The lids should be drawn with the fingers as far away from the cornea and globe as possible—first the upper and then the lower lid—and the stream directed into the upper and lower cul-de-sacs.

Together with the foregoing the use of iced applications should be carried out every hour or two for at least twenty to thirty minutes at a time. This should be done in the following manner: Take a square block of ice, perfectly flat on top and large enough to hold at least four compresses of lint about three inches square. The latter are laid upon the swollen lids and changed often enough to keep up a uniform degree of cold. These compresses should be merely damp; it is well to squeeze out any water they may have soaked up. The continuous use of cold or the application of ice-bags is apt to chill the eye, to lower its vitality, and to encourage the evils we most desire to avoid. An ice-bag is also apt to cause pain and discomfort from its weight, and its use is therefore not advisable.

As the disease advances the discharge becomes thicker and more copious, while the lids appear less glazed and tense. Nitrate of silver should now be applied once a day to the palpebral conjunctiva in from two- to four-per-cent solutions. First, the lids should be carefully everted, thoroughly cleansed of all adherent discharge, and then thoroughly dried. The silver solution is now applied to the conjunctiva by means of cotton twisted around a toothpick, any excess of the silver salt being washed off with five-per-cent solution of sodium chloride. Care should be taken not to injure the cornea with the application, and the greatest gentleness should always be observed by both surgeon and nurse during all the applications and manipulations of the inflamed eyes.

Should the cornea look cloudy a one-per-cent solution of atropine sulphate should be instilled into the interpalpebral space sufficiently often to dilate the pupil. The iced compresses should be stopped and replaced by applications of heat in the form of moist applications at a temperature of 115° to 120° F. Warmed vaselin should be applied to the lid surface previous to the application of the heat in order to avoid scalding the skin. These applications should be begun at a moderate temperature and the heat gradually increased. Any excess of water should be wrung out of the cloth before applying in order to prevent excoriation of the skin from the water running off the application. When the discharge becomes profuse, in addition to the silver solution the

following mixture, introduced by X. C. Scott, of Cleveland, is recommended:

Hydrastin sulphate, 5 grains;
Boric acid, 5 grains;
Sod. bibor., 5 grains;
Tr. opii, 5 grains;
Aq. dest., 1 ounce.

Mix and filter. Sig.: To be instilled into the eye every hour.

When the disease becomes complicated with corneal ulcer and the discharge is excessive, the use of a solution of formalin 1:5000 to 1:10,000 is highly recommended. It is non-irritating and a very active destroyer of pyogenic bacteria. Various other solutions have been used with more or less advantage, proving probably that the good results are due not so much to the character of the solution as the cleansing that is accomplished. Among these may be mentioned:

Potassium permanganate, 1 part;
Aq. dest., 4000 parts.

Or,

Hydrarg. bichloride, 1 part;
Aq. dest., 8000 parts.

Chlorine water is very efficient when much pus is secreted:

Chlorine water, 12 drachms;
Distilled water, 1 quart.

Peroxide of hydrogen can also be used with advantage just before the irrigations. Following the irrigation it is good practice to insert between the lids a sterile ointment, of which vaselin is probably the most desirable.

When pressure is obviously exerted upon the eyeball from the hard, tense, and swollen lids, a canthotomy will give relief.

The sound eye should be protected from infection either by a bandage or by means of Buller's shield, although in infants the latter will be kept in position with difficulty.

The nurse and others in attendance upon the child must be impressed with the importance of faithfully carrying out the treatment as outlined if a favorable result is to be obtained and the eyesight to be preserved. They should also be warned of the highly contagious nature of the discharge.

The general health of the patient must be carefully looked after. The majority of cases of ophthalmia neonatorum are recruited from the lower classes, or at least from the ranks of the improvident and careless, and the surgeon may expect that the feeding of the infant, the instruction of the mother in the management of sleep, bathing, dress, etc., will be especially required.

BRONCHIECTASIS.

In the course of an article on this subject in the *London Practitioner* for April, 1902, ACLAND states that in treating bronchiectasis three main objects must be kept in view: (*a*) the evacuation of the purulent and offensive secretion; (*b*) the disinfection of the tubes and the prevention of the fetor; (*c*) the obliteration of the cavities.

The variety of methods proposed is an evidence of the difficulty of accomplishing these objects.

To place them in the order of their efficiency they are classified as follows:

1. Inhalations of volatilized antiseptics: (*a*) creosote, vapor-baths; (*b*) inhalations of creosote, oil of peppermint, eucalyptus, etc.

2. Subcutaneous and intravenous injections of antiseptic fluids.

3. Internal medication.

4. Surgical treatment (incision and drainage).

Sometimes one, sometimes another, of these various methods of treatment seems to succeed in a particular case, and fails hopelessly to give relief in another.

The most successful means of relieving the fetor, and occasionally, but by no means always, of lessening the amount of the expectoration, is the inhalation under certain conditions of crude creosote vapor, as originally suggested by Dr. Arnold Chaplin. It is above all things necessary to carry out this treatment systematically and thoroughly, and this requires a good deal of perseverance on the part of both doctor and patient.

The details of this method are as follows:

A small room, free of any furniture except that of the simplest kind, and without hangings, is selected. It should have good ventilation, provided mainly by means of a small fireplace, or in summer by means of Tobin's tubes. The patient should be provided with a comfortable wooden chair. On a small table is arranged an evaporating dish of the capacity of about half a pint, heated over a spirit lamp. It is advisable not to consent to the use of a Bunsen gas-burner, since the patient has to be in a confined space for some considerable time, and the fumes of the gas add considerably to his discomfort, and headache, etc. Into the evaporating basin is put commercial creosote, which not only is cheapest, but is for practical purposes far the most efficient of the various antiseptics which have been suggested for this purpose.

The creosote is slowly vaporized, and as the dense fumes begin to rise the patient commences to cough, and not only are the tubes cleared of the offensive secretions, but the deep inspirations which follow serve to draw the creosote vapor into the smaller bronchioles, bringing it into immediate contact with the decomposing pus in the dilated tubes. A twofold object is thus effected—the cleansing of the tubes and the evacuation of their contents. It is in this combination that the creosote vapor-bath is more effectual than any other form of treatment, and it is also the reason why difficulties arise in carrying it out, since, until the patient becomes more or less accustomed to them, the fumes, which are very penetrating, cause a considerable amount of distress, and it is mainly the great benefit which is derived from the treatment which encourages patients to continue it.

It should be remembered that the volatilization of a large amount of crude creosote makes everything in a mess, and that the patient's clothes must be protected, and no ornaments or pictures must be left upon the walls. It may be necessary, too, to protect the eyes and face with a mask, though some patients prefer protecting the eyes merely with a handkerchief.

The treatment should be begun gradually, and the length of bath increased from ten minutes to an hour as the patient becomes more tolerant of it, giving it at first every two or three days, and subsequently more often.

Seeing that the creosote fumes are in themselves very irritating, it is probable that after the maximum effect in the direction of lessening fetor has been arrived at, it is better to discontinue the baths for a time so as not to keep up the bronchial irritation. The diminution in fetor is a far more favorable sign than mere diminution in the amount of sputum.

The effect on the patient must be carefully watched, and the length and frequency of the baths regulated according to the amount of distress and exhaustion they cause. They should not be given every day at first in any case.

TREATMENT OF DIPHTHERIA WITH ANTITOXIN.

The *Journal of the American Medical Association* of April 19, 1902, reminds us editorially that the time is long past when there could be any difference of opinion as to the utility of the antitoxin in the treatment and in the prevention of diphtheria, and at the present day, after abundant time has elapsed for the enthusiasm aroused by an important innovation to subside, it may be accepted as the deliberate judgment of the medical profession that the discovery of the antitoxin of diphtheria must rank with that of anesthesia and that of vaccination as among the most beneficent in the history of medicine. Statistical evidence to this effect has been forthcoming in overwhelmingly convincing amount, and it would appear almost superfluous to add thereto. Nevertheless, the results of a study of the cases of diphtheria treated in the municipal hospital of Mulhausen, a small manufacturing city of Germany, both before and since the introduction of the antitoxin, are not without interest. Thus, the percentage of mortality from diphtheria in 1892 was 53.4; in 1893, 55.3; in 1894, 51.7; in 1895, 38.5; in 1896, 28.8; in 1897, 16; in 1898, 20; in 1899, 15.1; in 1900, 18.7. Among the cases of pharyngeal diphtheria the mortality percentage in 1892 was 20; in 1893, 35; in 1894, 37.1; in 1895, 19.4; in 1896, 26.2; in 1897, 8.6; in 1898, 14.8; in 1899, 7.1; in 1900, 8.1. Of the cases of laryngeal diphtheria the percentage was, among those not operated on: in 1892, 33.3; in 1893, 81.8; in 1894, 58.3; in 1895, 100; in 1896, 0; in 1897, 10; in 1898, 12.5; in 1899, 7.1; in 1900, 8.3; while among those operated on the percentage was, in 1892, 67.5; in 1893, 67.7; in 1894, 70.9; in 1895, 70.7; in 1896, 33.3; in 1897, 29.4; in 1898, 35.3; in 1899, 34.4; in 1900, 37. At the same time a large reduction in the number of cases of laryngeal diphtheria requiring operation was noted after the institution of antitoxin treatment. That the favorable results, which correspond closely with those observed elsewhere, are not due to the character of the disease is shown by the fact that the cases during the years 1899 and 1900 were more severe than at any time in the last twenty years.

The plan of treatment pursued consists in the administration immediately of an injection of antitoxin to every child admitted to the hospital, the amount varying with the duration and the severity of the symptoms. Thus, in cases of pharyngeal diphtheria from 600 to 1500 immunity units are given, in accordance with the extent of the deposit, the degree of temperature elevation, and the

duration of the disease, the same dose or a smaller one being repeated on the following day, and if necessary also on the third day. In cases of laryngeal stenosis, not less than 1500 immunity units are injected at once, and the same dose is repeated in from six to twelve hours, and possibly from 1000 to 1500 units on the following day. In grave cases, in which the general intoxication is profound, a dose of 3000 immunity units is injected at once. Generally, 4000 or 4500 immunity units are sufficient, but in rare cases as much as 6000 units are required. In some cases operative intervention has been averted by the administration of an emetic, the stenosis being, as a result, overcome for a few hours, until the antitoxin has time to exert its influence.

The local treatment in cases of pharyngeal diphtheria consists in the use of gargles of potassium chlorate or boric acid, but in the case of small children, incapable of gargling, local treatment is entirely foregone. Only in severe septic cases are applications of solution of ferric chloride, 1 to 5 or 1 to 10, made to the pharynx, and sprays of antiseptic solutions practiced. The use of the ice collar and the swallowing of bits of ice is practiced only when the glands of the neck are enlarged and deglutition is painful. The general measures consist of rest in bed, a nutritious diet, and the treatment of complications. Cases of laryngeal diphtheria and of tracheotomy are kept in a room whose air is saturated with steam.

There are at present few specifics in therapeutics, and the antitoxin of diphtheria must be considered one of the most important and most reliable of these. To be most effective it should be employed early and in sufficient dosage. No seriously unpleasant secondary results need be feared from such a course, and if these injunctions be observed we may hope that the mortality from diphtheria, which already has been reduced to half of what it formerly was prior to the introduction and general employment of the antitoxin, will be still further reduced. Even now much of the terror formerly aroused by the development of a case of diphtheria in a household has been removed because of the more hopeful outlook in the individual case and of the powerful weapon for attack and defense that has been placed in the physician's hands in the form of antitoxin injected for both curative and prophylactic purposes.

THE TREATMENT OF PUERPERAL INFECTION.

In the *Journal of the American Medical Association* of April 19, 1902, WIGGIN states that if on visiting the puerperal patient the physician finds an accelerated pulse and elevated temperature, he should carefully examine her and afterward make a local examination, first disinfecting his hands and instruments. If he finds an ulceration of the perineum, vagina, or cervical tissues, he should thoroughly wash out the vagina with salt solution, and follow this with a strong solution of peroxide of hydrogen. If in the judgment of the physician it is necessary to follow this treatment with other irrigations of the vagina, he should administer them himself, and not leave them for the nurse. If the septic trouble is more serious in character and is due to the retention in the uterine cavity of decomposed septic material, the patient should be put upon a table and placed under the influence of an anesthetic, and after the external genitals and vagina have been carefully disinfected the uterine cavity should be explored with the finger, which has also been carefully disinfected; or if the operator is trained and skilful, with the curette, and the offending material removed. The cavity of the organ should then be thoroughly washed out with saline solution followed by hydrogen dioxide, and an application of Monsell's solution if the cavity has been curetted. If the operation has been well performed the patient's constitutional symptoms will probably disappear, and no further uterine intervention will be necessary. It will, however, probably be best for the physician to give the patient a vaginal douche of saline solution, followed by hydrogen dioxide, once or twice a day for several days. If the constitutional symptoms persist and the condition becomes chronic, it may be necessary to again explore the cavity of the uterus. If the trouble extends beyond the endometrium and an abscess forms, it should be evacuated by means of a vaginal incision, or if there be a bilateral pyosalpinx to deal with, it may be necessary to open the abdomen and remove the diseased tubes and uterus. If it be determined after careful examination that the septic condition of the patient is due to the direct invasion of the tissues by the virulent streptococcus, the physician should, in the writer's opinion, after thoroughly cleansing the external genitals and the

vagina of the patient, dilate the cervix and explore the uterine cavity with the finger or with the curette, and then, after thoroughly irrigating the cavity with saline solution and hydrozone, should make an application of Monsell's solution. If the constitutional symptoms of the patient, as the result of this treatment, do not show improvement in a few hours, an intravenous infusion of a considerable quantity of saline solution should be given and the advisability of opening the abdomen and removing the uterus considered, bearing in mind, as has been pointed out by Vineberg, that the uterus is the focus of the disease, and that the patient's system will eliminate a reasonable amount of the infective material by the skin, kidneys, and intestines; therefore, if the further production of the poison can be stopped, there is a reasonable chance of that already in the patient's system being eliminated and recovery following.

Although a few observers have claimed benefit to have accrued to their patients suffering from this form of infection from the use of antistreptococcic serum, the burden of testimony is against its having been of any avail in these cases; if used, from 10 to 20 cubic centimeters should be injected into the patient's body every twelve hours till she shows signs of improvement, or a reasonable quantity has been used. When from the severe prostration and other constitutional symptoms which accompany it, there is reason to believe that the patient is suffering from septicemia, she should at once be stimulated and given the benefit of a large intravenous saline infusion slowly administered, the temperature of the solution in the reservoir being 120° F., and if she rallies in response to this treatment the vagina and uterine cavity should be cleaned out by thoroughly washing them with saline solution followed by hydrogen dioxide, and the cavities loosely packed with sterilized gauze soaked in ozonized glycerin, which will tend still further to disinfect the parts. The gauze should be removed in from eight to twelve hours and the application repeated. If under this treatment there are signs of improvement, it may be continued at lengthening intervals, or the propriety of more radical measures be considered. If there is no improvement in the patient's condition, further operative treatment will be of no avail. If pyemic conditions are recognized before the onset of pneumonia, there may be some hope under favorable conditions of saving the patient by cleansing and disinfecting the external genitals and vagina, followed by the prompt performance of an abdominal hysterectomy. When thrombosis of the femoral vein occurs, its course should be painted with iodine, the limb wrapped in cotton, bandaged, and kept in an elevated position, which should be maintained for two weeks after all swelling has disappeared. Abscesses should be promptly opened.

In the treatment of the various forms of puerperal wound infection there is little to hope for in the use of drugs, except as temporary aids, the physician's reliance being placed rather on the administration of proper nourishment, increasing the activity of the skin, kidneys, and bowels, the internal administration of large quantities of saline solution by means of enemas, injections under the skin or into the patient's veins, according to the urgency of the symptoms, and appropriate carefully considered local treatment, which must be decided for each case as it arises.

Curettage and other operative measures should not be universally condemned because when performed by inexperienced and untrained men, or under unfavorable conditions, they have more often been followed by harmful rather than good results. The importance of an early recognition of the fact that the patient's wounds have become infected cannot be overestimated, for on this the physician must rely to institute proper local treatment at an early stage of the trouble and before the patient's system is overwhelmed by the poison, for on this must largely depend whether or not the prognosis of the graver forms of the disorder is to be more favorable in the future than in the past.

TINNITUS AURIUM: SOME REMARKS ON ITS TREATMENT.

In the issue of the *Laryngoscope* for March, 1902, HARRIS states that Seiss, of Philadelphia, has reported favorable results in tinnitus due to sclerosis of the middle ear from two methods—the application of ethyl chloride to the mastoid, and the introduction of warm albolene and menthol into the middle ear per tuba. Harris regrets that in a limited number of cases, where he gave both methods careful trial, he got no success.

Where our examination shows no evidence of interference with sound waves, and

when all local measures prove futile, we are forced to resort to internal medication to relieve the tinnitus.

The therapeutic treatment of tinnitus is to-day exceedingly unsatisfactory. Clear indications for the use of a certain class of drugs are lacking. To a large extent we are compelled to grope in the dark. Direct nerve depressants or sedatives would seem to be called for, and probably are most useful in the majority of cases. In a certain number of limited cases arterial depressants will do good, as enumeration of all the drugs employed by different observers would almost exhaust the Pharmacopœia. In many instances the result of the use of the drug is not mentioned, or success has been observed in only a single case. Harris then speaks of those drugs that have been carefully reported or what he has used himself. These, in the order of frequency with which they have been prescribed, are strychnine, iodide of potassium, nitroglycerin, tincture of gelsemium, bromide of potassium, and tincture of digitalis.

Strychnine sulphate in one-sixtieth grain doses before meals gave the best results, which, however, were not brilliant. It was used in seventeen cases; all but one were due to chronic catarrh or mixed disease. Relief, greater or less, and in some instances only temporary, was obtained in seven, or forty-one per cent.

Iodide of potassium was prescribed in three cases of chronic diseases of the internal ear, with relief in all, and two cases of acute trouble with equal success, while in eight cases of mixed disease there was relief in only two, or twenty-five per cent.

Nitroglycerin was given in several cases with high tension of arterioles. It was often necessary to give large doses, sometimes as high as 20 minims in the day, in order to produce decided physiological results. In at least two cases the effect on the tinnitus was useful, but naturally the large dose could not be continued. With digitalis, on the other hand, tried where there was a clear nervous or arterial tinnitus, his results were uniformly disappointing. In every instance the drug disarranged the stomach without influencing the noise, so that its use has now been abandoned.

Tincture of gelsemium Harris began using some five years ago, and has employed it in a number of cases, at times with good results. He is not prepared to make too strong a claim for its value, and yet the results certainly warrant making use of it, where strychnine has failed. The drug is a spinal depressant, and has no decided action on the heart.

In ten cases where it was given, there was relief of more or less permanence to five. All of these improved cases were cases of middle-ear disease. The drug failed totally in cases of disease of the internal ear.

His experience with aconite, atropine, and arsenic has been very limited and totally negative. Bromide of potassium, so generally recommended either as the salt or in the form of hydrobromic acid, has been extensively employed as a *dernier ressort*, but without a single exception has proved a disappointment.

Some years ago Blake recommended small doses of quinine frequently repeated. In a single case where it was given and all else had failed, it seemed to give some relief. It has been previously stated that any condition of the general system will have its effect on the noise. Harris has frequently in associated involvement of the alimentary canal prescribed salines or saline mineral waters with good results.

Gomez some years ago recommended conium in the form of the alkaloid. He reported a series of cases with excellent results. Dr. Seiss has used it recently in a number of cases, but without any beneficial results, unless in one case.

Mention should be made of the use of hot air introduced into the middle ear, as recommended by Vansant.

Finally, it may be of interest to refer to the use of suprarenal extract. Dr. W. H. Bates has used it in over 200 cases with variable results, the best occurring in acute cases.

Harris concludes that tinnitus is a very common and annoying symptom in ear disease, and that its origin is not thoroughly understood, but in many cases it is due to interference of sound waves; it does not always mean deafness. Much can often be done for it if the exact cause can be discovered. Drugs are very disappointing in its treatment; strychnine seems to give the best results where local treatment has failed. Careful study and recording of cases is essential to arrive at a proper understanding of the subject.

ERGOTINE AS A PROPHYLACTIC AND SPECIFIC IN PUERPERAL FEVER.

In the *Therapeutische Monatshefte* for February, 1902, SOLT records his experience with ergotine in the prevention and treatment of puerperal fever. His idea is that by its use the uterus expels from its cavity materials which may perchance by decomposition changes produce septic absorption. As a prophylactic against this, he administers a formula such as follows:

Ergotine, 1 drachm;
Distilled water, 1 drachm;
Aromatic elixir, ½ ounce.

Ten to twenty drops three times a day.

Or,

Ergotine, 1 drachm;
Peppermint water, 6 drachms.

To be given in the same dose.

It is of interest to note that many American obstetricians believe that ergot and its various preparations should not be given to many women because it tends to produce a closure of the cervix and so prevents the escape of substances which would naturally drain away.

FURTHER SUGGESTIONS TO ANESTHETISTS.

Under this title DE TARNOWSKY advises as follows:

1. Always reassure the patient before beginning an operation.

2. Avoid or lessen the sense of suffocation by starting with a small amount of the anesthetic, holding the cone six inches from the patient's face, and decreasing the distance by gradual degrees.

3. Count out loud from one to a hundred, requesting the patient to repeat the numerals after you.

4. Push the anesthetic so soon as the higher centers show incoördination.

5. Always keep the lower jaw well forward, and only use the mouth-gag and tongue forceps when necessary.

6. During complete narcosis, watch (*a*) respiration, (*b*) pulse and facial artery, (*c*) pupils.

7. Consider (*a*) lateral rolling of eyeballs, (*b*) deep sighing respiration, (*c*) deglutition movements, (*d*) the hiccough which precedes the act of vomiting, as signals to push the anesthetic. The precursory hiccough is always a positive sign of returning reflexes; by immediately pouring an ounce of ether on the cone and precluding air, it is always possible to prevent actual vomiting.

MENTHOLIZATION OF THE AIR-PASSAGES IN ETHER ANESTHESIA.

BRIGGS commends this plan of treatment in the *Occidental Medical Times* for April, 1902. He says that the remarkable paresthetic effect of menthol and oil of peppermint on the mucosa of the air-passages led him several months ago to suggest their use preliminary to etherization. Not until February 21, 1902, however, did he put the suggestion to practical test. On that date, preliminary to etherization in an extremely nervous patient with an annoying bronchial cough, he used menthol with really magical effect. A day or two later, at his request, Dr. Dufficy, at the Mater Misericordiæ Hospital, employed oil of peppermint in two cases for the same purpose, and with like result. Since that time he has used it in a number of surgical cases, and Dr. Dufficy has employed it in all the etherizations at the Mater Misericordiæ Hospital with such result as he will report.

Oil of peppermint, menthol, pure and in saturated alcoholic solution, seem to be equally effective, but on the score of economy and convenience oil of peppermint is preferable. The method is simple: Before etherization is begun sprinkle about a drachm of the oil or of the 50-per-cent alcoholic solution of menthol in the cone with ether, being careful not to let it drip; bring the cone down over the face slowly, and after four or five inspirations crowd it down well and push the etherization as rapidly as is consistent with safety—how rapidly, of course, depends somewhat on the individual patient, and must be determined by the anesthetist.

The advantages of this as compared with the usual method are:

1. Anesthesia may be more easily and quickly induced and more easily and smoothly maintained.

2. Entire freedom from coughing and suffocation and comparative freedom from nausea, vomiting, and retching.

3. Suppression or marked abbreviation of the period of excitement.

4. Profound first anesthesia, which permits minor operations with greater certainty than does the usual method.

5. The author's observation inclines him to believe that there is less postoperative nausea and vomiting.

SPONTANEOUS HEALING OF GENU VALGUM.

A writer in a foreign journal is quoted by the *Boston Medical and Surgical Journal* of January 16, 1902, to the effect that in twelve cases which he reports untreated there was an arrest of the deformity, but not a complete recovery. In these marked improvement in the deformity was observed. The writer is of the opinion that in many cases operation must be avoided and the improvement left to the efforts of nature.

A SEVERE CASE OF CARBOLIC ACID GANGRENE.

There is reason, according to the observation of SHELDON (*Medical Record,* April 5, 1902), to believe that the idiosyncrasy of the patient and the surrounding conditions play a part in carbolic acid gangrene, and that such gangrene may extend beyond the borders of the area brought in contact with the acid. Two cases of gangrene following the local application of the acid have been reported by Fischer, and the patients were brothers. Sheldon's first case was reported over a year ago. His second case was that of a woman, twenty-six years old, unmarried, with a negative history. She had applied a few drops of a fifty-per-cent solution of carbolic acid to a corn on the outer side of the second toe of the left foot for about half a minute, and the whole foot was then washed with water. Twelve hours later burning was felt over the entire foot, the affected toe was reddened and slightly swollen, except the area where the acid had been applied, which was black and felt quite "dead." Destruction of tissue continued for five days. At the end of the first week the symptoms gradually abated, the dead skin sloughed, the redness disappeared, and evidences of resolution could be noted. The healing was slow and resulted in the forming of a considerable amount of scar tissue.

The treatment consisted in keeping the foot clean. During the progressive stage a dilute solution of cocaine was occasionally applied to the foot to relieve pain. Two hypodermic injections of morphine were given for the same purpose. When resolution began, zinc-oxide ointment and Lassar's paste were used locally.

Two years prior to this case the patient and her sister accidentally got some carbolic acid solution—strength unknown—on their fingers. The two fingers of the patient and a finger and thumb of the sister were affected somewhat as the patient's foot was affected. There was pain, burning, itching, and redness, with gangrene of the skin, followed by sloughing and resolution.

A NEW CONSERVATIVE OPERATION ON THE TESTICLE.

RASUMOWSKY (*Archiv für Klin. Chirurgie,* Bd. 65, Heft 3) makes a plea for more conservative operations in cases of tubercular epididymitis. There is always danger of the affection developing on the opposite side, hence every effort should be made to save the testicle and as much of the unaffected portion of the epididymis as possible. In the early stages castration is not justifiable; the disease can be eradicated by epididymectomy, and in some cases even partial resection has been sufficient to effect a cure. Not only should the testicle be retained, but an effort should also be made to preserve its functional activity.

Scaduto has demonstrated on a dog that the epididymis can be excised and the cut end of the vas implanted over the rete testis in such a manner as to preserve an open passage-way for the spermatozoa to reach the seminal vesicles. The advantages to be derived by a patient from such an operation are self-apparent. Before Scaduto's article appeared, the author had been working along the same line, and had devised methods for reëstablishing the continuity of the seminal passages after partial or complete resection of the epididymis.

The first method is employed for the formation of an anastomosis between the rete testis and the vas deferens, after complete removal of the epididymis. The operation is performed in three stages:

1. Excision of the epididymis is performed in the usual manner, care being taken not to injure the blood-vessels which lie along the inner border of the epididymis.

2. The open end of the vas is slit up for a distance of one centimeter. The broadened end is sutured to the superficial surface of the testicle in such a way as to bring the lumen of the vas over the divided open ends of the rete testis. Three or four fine catgut sutures are used for this purpose. The sutures are passed through the outer coats

of the vas (avoiding the mucosa) and through the connective tissue of the testicle and tied. A second set of sutures is next introduced to draw the tunica albuginea together over the vas and bury it in the mediastinum testis. The end of the vas now lies embedded in the testicle and presents the same appearance as the rubber tube used in a Witzel gastrostomy.

3. The divided tunica vaginalis is reunited by means of buried sutures. Iodoform gauze drainage is introduced, and the skin wound is closed with metal sutures except at the point of drainage.

The second method aims to establish an anastomosis between the vas deferens and the tube of the epididymis after resection of the lower portion of the epididymis:

1. Resection is performed in the same manner as in the first operation, except that the head and perhaps a portion of the body of the epididymis are left attached to the testicle.

2. A pit is formed in the cut surface of the remaining part of the epididymis by means of a small knife. A fine catgut suture is passed through the walls of the split end of the vas. Both ends of this suture are threaded on needles and reintroduced at the bottom of the artificial pit, made to traverse the entire thickness of the epididymis, and emerge on its free surface. This suture, when drawn taut and tied, anchors the end of the vas over the tube of the epididymis at the bottom of the pit. In order to secure the anastomosis more firmly the cut edges of the epididymis are sutured together around the implanted vas.

3. The operation is completed as described in the previous method.

Both of these operations are easily performed, do not require the expenditure of much time, and cause but little additional trauma to the tissues.

By slight modification of the above methods the continuity of the seminal passages can be reëstablished after almost every form of conservative operation on the epididymis and testicle. Fabrini and others have demonstrated that nature can restore the continuity of the seminal canals after crossection of the epididymis. The above operations bring the mucosæ of the divided seminal passages into extensive and intimate contact, and afford nature the best opportunity for perfecting the anastomosis.

Two patients were operated on by the first method after complete resection of the epididymis, and two by the second method after partial resection. In none of these cases was there a recurrence of the tubercular process. No report is given concerning the functional result of the anastomosis in any of the cases.

OPERATIVE TREATMENT OF ENLARGED PROSTATE.

If the lobes of the prostate are flat, says FENWICK (*Practitioner*, February, 1902), and feel fibrous, if the sulcus is marked by a deep trough, and the function of the testes is probably in abeyance, neither vasectomy nor castration will be of much use in relieving the patient of his catheter. But if the prostate be elastic and its lobes project, and its sulcus be normal, bilateral vasectomy or castration will give relief.

If one lobe be broad, flat, and feel fibrous, and the other lobe project and be elastic, vasectomy or castration on the side of the plump lobe will be beneficial. It must be remembered that castration is of infinitely greater benefit than vasectomy.

Fenwick believes that all hard, tough prostates in which the interlobar sulcus is filled up by a ridge of firm tissue are unsuitable for vasectomy or orchidectomy.

If a patient between fifty and sixty complains of prostatic symptoms, and they necessitate operative relief, other conditions being favorable, and there is detected by rectal examination a small or medium-sized prostate which feels dense or tough, the sulcus being a trough or filled up, and there is no stony area in either lobe, pass a catheter and estimate the length of the prostatic uretha. Now insert a sound, and after searching for stone lay the beak flat and ascertain if a median lobe be present, or if the trigone be fairly level. If, in such a case, the prostatic urethra be only slightly lengthened, and the trigone level, perform perineal prostatotomy and drain for two weeks.

The clinician must always be on his guard to avoid mistaking a commencing hard carcinoma for a hard fibrous prostate. Hard cancer of the prostate is not so rare as is supposed, and it is most insidious in the onset.

The operation best adapted for the fibrous median lobe form is suprapubic cystotomy,

the median lobe being then removed, if possible, by making rough flaps of the mucous membrane, which will fall together and prevent that distressing recurrent irritation which is sometimes noticed when dense scars are present at the bladder neck.

But if the median lobe be adenomatous, the condition may be judged by the elastic projection of the prostatic lobes per rectum, and by the fine line of sulcus, which will be present as evidence of intracapsular tension. The operation will, on the whole, be more neatly and exactly carried out by a suprapubic cystotomy, the mucous membrane being divided anteroposteriorly over the summit of the median lobe, and the adenoma then shelled with the finger. The surgeon may find the prostate ripe, and consider it advisable to anticipate further growth by shelling out the entire prostate. All this can, of course, be often done from the perineum, but the enucleation is not so well under control.

Fenwick knows no possible way of saving an old patient from sudden death if the capsule were split, and this venous province even slightly opened. Hence in enucleation the finger and lever is kept religiously inside of the capsule by Fenwick, and pressure is exerted as much as is possible upon the adenomatous masses to be enucleated.

When one finds by rectal examination a huge, elastic, backwardly projecting prostate, with a sulcus almost obliterated by a line of intraprostatic tension, and in addition a distorted, lengthened, prostatic canal, the best procedure is enucleation. Freyer was probably the first operator to grasp the idea that in enucleating adenomatous masses the capsule was often practically emptied of the prostate, and that it is not often wise to do this. The ripeness for removal can be determined by the tension of the capsule. Fenwick recognizes that opening the bladder above the pubes in very old men is a severe and exhausting procedure, and he advocates the perineal route if there is any doubt about the vim of the patient.

It would seem that up to the age of sixty the harder types of prostates are met with, and that over sixty years of age the softer and larger prostates are most encountered. Only fifty per cent, however, of the prostates encountered in practice can be shelled out of their capsules. Putting matters in a nutshell, there are two essential groups to consider—the small, tough, flat, unshellable prostate, which generally has a filled-up sulcus; and the large, soft, elastic, projecting, shellable prostate, which has a fine line of sulcus.

These steps should be taken before any case is operated on by those who have at command such diagnostic accessories as the cystoscope and the *x*-ray:

1. The preparation of the patient with small doses of hexamethylen-tetramine.

2. The estimation of the length of the prostatic uretha (the perineal distance of Watson). The estimation of the amount of residual urine.

3. The careful examination of the rectal contour of the gland, and its consistence digitally and bimanually under chloroform.

4. Cystoscopy, if the instrument can be passed without undue violence, to demonstrate the presence or absence of a median lobe, to eliminate growth of the bladder, and encysted stone. Fenwick's cystoscope is shaped like a calculus sound. Its powers are usually restricted to the medium-sized prostates.

5. Radiography to eliminate deeply-lying post-prostatic or post-trigonal stone in large and irregular prostates.

ADRENALIN FOR THROAT, NOSE, AND EAR AFFECTIONS.

Adrenalin (McBride and Logan, *Edinburgh Medical Journal*, February, 1902) raises the blood-pressure and is a powerful vasoconstrictor, rapidly producing a marked anemia of the mucous surface to which it is applied. It does not appear to have in itself either an anesthetic or an antiseptic action; but when cocaine is applied in conjunction with it, the former drug apparently has a more efficient and more lasting action. Its physiological action upon the nasal mucous membrane may be prolonged for an hour or even for several hours. It may be applied in the form of a spray, by painting it upon the mucosa, or when it is desired to obtain a bloodless field for operation, it may even be injected under the mucous membrane. It does not seem to produce any toxic effects when used as a local application. On account of its vasoconstrictor action, the drug has found its chief application in this field of work along the three following lines:

(1) In more or less acute inflammation of the nose and throat; (2) in simple congestions due to a dilatation of the vessels; (3) as a hemostatic in bleeding, or to prevent

undue hemorrhage in operations upon the nose and throat.

NORTON WILSON (*Laryngoscope*, St. Louis, July, 1901) gives his experience in a number of instances. In acute coryza he found that the swelling of the turbinated bodies was almost immediately relieved, while the profuse watery discharge ceased to flow. In a case of acute laryngitis which came under his observation, where there was loss of voice and considerable pain on swallowing, the voice was restored in twenty-four hours, and the pain very much lessened after five applications of the spray. In acute pharyngitis and tonsillitis, the relief was immediate, and more lasting if combined with cocaine or eucaine. For the temporary relief of hay-fever he had found no other remedy equal to it, and less irritation was produced by its use than in the case of the suprarenal gland itself. Operations within the nasal cavity could be rendered bloodless, or nearly so; but he found that after an hour or more some bleeding took place, though not to any marked degree. These results are merely stated without any detailed account of the method employed.

MOURE and BRINDEL (*Rev. de hebd. Laryngol.*, Bordeaux, Dec. 28, 1901, No. 52) record several cases of the beneficent effects of adrenalin.

SUCCESSFUL CASE OF SUTURE OF THE HEART.

FONTAN (*Revue de Chirurgie*, No. 1, 1902) operated upon a soldier two hours after he was stabbed in the heart, turning up a thoracic flap, the base of which lay externally in the anterior axillary line of the fourth, fifth, and sixth ribs. When the chest was opened, the lung after a few expansile movements collapsed into the costovertebral gutter. The diaphragm after a few convulsive movements became immobile in the entire portion exposed. There was a vertical wound in the pericardium from which the blood was escaping. This sac was opened, whereupon the heart beat precipitately and tumultuously. In the left ventricle there was a wound about two-fifths of an inch in length, which gaped with each contraction of the ventricle. This was closed with catgut suture, after which the pericardium was sutured, and the thoracic flap was replaced. The patient subsequently suffered from pleuropneumonia and purulent pleurisy, which was treated by thoracotomy, and a phlebitis of the lower extremity. None the less, he recovered, and presented no signs of myocardial, endocardial, or pericardial trouble.

SOME INDICATIONS FOR GASTROENTEROSTOMY.

On an experience of sixty-four operations, MAYO (*International Journal of Surgery*, February, 1902) asserts that gastroenterostomy is indicated in malignant cases only if the symptoms of obstruction are present. The mortality of twenty-five to thirty per cent is due to the bad condition of the patient. The early cases in good condition need radical treatment, and this, pylorectomy, etc., on this account has an even lower mortality than gastroenterostomy.

For open ulcer gastroenterostomy is of the greatest benefit if the ulcer is situated, as it usually is, near the pylorus. Under such circumstances the stomach is of normal or increased size, the latter condition due either to obstruction or pyloric spasm. If the ulcer be distant from the pylorus and the stomach contracted, gastroenterostomy has less value, and the anastomotic opening may close, although the ulcer is usually healed before this takes place. Mayo has had thirteen gastroenterostomies for open intractable ulcer with one death.

For benign obstruction, without regard to origin, gastroenterostomy is the operation of choice, the cure being immediate and lasting. Gastroenterostomy drains from the lowest point and is superior in every way to pyloroplasty. In thirty-five gastroenterostomies of this class only one died.

OPERATION FOR RECTAL PROLAPSE.

For a rectal prolapse in a man of forty-three, a rectal prolapse that could be produced at will by the patient when in a squatting posture, the tumor also being susceptible of being sucked back as it were, PARHAM (*International Journal of Surgery*, February, 1902) successfully operated, employing the method of intra-abdominal traction and fixation to the internal oblique and transversalis muscles.

The operation was through McBurney's gridiron incision, the muscular layers being separated in the direction of their fibers rather than cut. The sigmoid having been

identified and brought out, a silkworm loop was put in and the bowel dropped. The patient then was told to force out the prolapse by a voluntary effort. This he easily did, the anal sphincter being well relaxed by the intraspinal injection of cocaine. The silkworm loop was now caught up, the sigmoid again brought out, and the bowel forcibly drawn upon until an assistant, watching the anus, noted that the prolapse had disappeared into the pelvis. The needle carrying the kangaroo tendon was passed under the anterior longitudinal band—that is, between the sigmoid surface and the band—and brought out; thence carried obliquely across, it was again passed under the band in the same manner. There were now two free ends of the suture on opposite sides of the band. Each end was threaded on a needle and passed straight through the peritoneum, transversalis and internal oblique muscles. The sigmoid was now suspended by the kangaroo tendon, and it was easily drawn up into proper contact with the wall by pulling on the two ends of the suture, assisted by a finger in the peritoneal cavity gently holding up the sigmoid. The sigmoid was fixed in place by the tying of the suture. This brought together, at the same time, the separated fibers of the internal oblique and transversalis muscles, so that one more suture external to this closed these layers very accurately. The two ends of the kangaroo tendon tied on the external surface of the internal oblique made, with the part suspending the sigmoid, a complete figure of eight. The aponeurosis of the external oblique was brought together by a continuous kangaroo tendon suture. The skin was united by interrupted silkworm-gut sutures. On the completion of the operation one-quarter grain of morphine sulphate was given hypodermically, and subsequently ten drops of laudanum by mouth every four hours to inhibit peristalsis. The foot of the bed was kept elevated.

In about three weeks the patient was discharged well, defecation being normal and entirely painless.

RUPTURE OF THE JEJUNUM FROM DIRECT VIOLENCE WITHOUT EXTERNAL BRUISING.

LIVINGSTON (*British Medical Journal*, March 1, 1902) reports the case of a boy sixteen years old, seen three hours after he had been stepped on by a horse. He then exhibited a pulse of 116, a respiration of 24, but complained of no pain. The abdomen showed no sign of external injury. The abdominal walls moved in respiration, but not quite freely. There was no tenderness in any particular spot to light pressure, but there was dulness on percussion in the hypogastrium and also in the flanks, changing in the latter situation with the position of the body. The boy passed half a pint of clear urine and had vomited twice before having been seen. In a few hours there was complete reaction. On the following morning the boy vomited a little bile. His temperature was 100°, pulse 110, and respiration 36. On the afternoon following there was slight action of the bowels, during which the patient became collapsed, and a few hours later vomited about a pint of coffee-ground fluid. In the following hours the recti became rigid, and as there was but trifling reaction, an attempt was made to open the abdomen. This could not be completed because of the alarming condition of the patient. There was at no time marked distention. At the post-mortem, one or two pints of bloody fluid was found in the peritoneal cavity, and a rent in the jejunum near its beginning, close to the spine, about 1½ inches long in the longitudinal axis of the bowel. No other source of hemorrhage was discovered.

UNNOTICED FRACTURES IN CHILDREN.

COTTON and VOSE (*Boston Medical and Surgical Journal*, Jan. 9, 1902) call attention to the ease with which fractures in children are overlooked because of the slight symptoms.

They note that many of these fractures show disproportionately little pain or reaction. It is true that fractures thus neglected are usually of minor importance and that the end result is good, but neglect of fixation involves a callous formation.

They have appended a list of 18 cases in which the diagnosis was made by the skiagraph. Most of these cases were instances of fracture of the clavicle. They say that in small children when there is a history of a fall or other trauma, and especially where the arm and shoulder girdle may be involved, the only safe way seems to be to assume a fracture as possible until every inch of bone has been gone over carefully. Only in this way can we be safe from occasional oversight.

EPIDURAL INJECTIONS FOR INCONTINENCE OF URINE.

ALBARRAN and CATHELIN (*Soc. de Biol.*, July 13, 1901; abstracted in *Centralblatt für Chir.*, No. 48, 1901) state that in four cases of incontinence of the bladder, due to various causes (tuberculosis of the bladder, paraplegia with cystitis, and relaxation of the sphincter in old women), after the epidural injection of one-sixth grain of cocaine, the contractile power of the sphincter returned in one or two days. It remained for a long time, but in some cases only after repeated injections.

TREATMENT OF ARTIFICIAL ANUS.

DELORE and PATEL (*Revue de Chirurgie*, No. 6, 1901) conclude a lengthy and very thorough study of this subject as follows:

Extraperitoneal methods of treatment should be employed only exceptionally, since the cure is uncertain, and obtained only at the expense of a long period. The extraperitoneal methods are sometimes dangerous, and often unsatisfactory. They, none the less, may be attempted if the opening is recent and is without a spur. When a spur is present, all these methods should be rejected.

Intraperitoneal methods are attended by little danger, and allow rational mechanical treatment. Enteroanastomosis is of little service, and enterectomy, or a unilateral exclusion, may be made, if diversion into the sigmoid flexure is possible.

Lateral enterorrhaphy should be reserved for cases of artificial opening into the large intestine, where there is no stricture to be feared. It is not applicable to openings into the small intestine.

Enterectomy is the operation of choice. The lesion is completely removed, and the continuity of the intestinal tract is immediately restored. Union of the two intestinal ends by means of a circular suture is to-day the exception rather than the rule. Murphy's button, possessed as it is of incontestable advantages, is the means of union commonly employed. It has practically no contraindications in the cure of artificial anus. It makes of enterectomy a certain, rapid, and benign operation. The advantages of the button are incident to the rapidity of its application, the simplicity of the operative technique, and the strength of the union brought about. The arguments advanced against it are to the effect that it is followed by stenosis. This is certainly very rare and much less to be dreaded than the effects of a circular enterorrhaphy. This latter procedure has been followed by obstruction which was fatal in a case reported by Braun, and in three other cases reported by Goetz. Chapaut has noted occlusion by the button in four cases. Gangrene and perforation have been observed in a number of cases.

RECURRENT SCIRRHUS OF THE BREAST TREATED WITH THE X-RAY.

PETERS (*British Medical Journal*, March 1, 1902) reports an extremely interesting case of cancer of the breast operated on by Lord Lister. Recurrence was noticed eight years later. When seen by Peters there was a projecting mass adherent to the rib at the site of the original incision. This growth slowly progressed, and there was at times swelling, bleeding, and pain. On December 5, 1901, the growth measured 3x2¾ inches. It had a well-raised margin covered by thin red epidermis, while the center was occupied by an irregular ulcer. Large tender glands could be felt at the edge of the lesser pectoral muscle. A 10-inch coil was employed to give a parallel discharge 4 to 7 inches long with Watson's vril break worked at maximum speed. A penetrator tube of medium hardness was used throughout. The exposures were made two or three times a week for ten or twenty minutes, the distance of the tube varying from two to four inches. In all, ten applications were made, over a period extending from December 5, 1901, to January 8, 1902. Improvement was noticeable at the end of a week's treatment, and on January 8 the character of the growth had completely changed. It then measured 1 x ¾ inches. The margin was only slightly raised, and the central ulcer was very small. The discharge and the pain had decreased to a minimum. The patient, ninety-three years old, died of croupous pneumonia on January 11.

TETANUS FOLLOWING THE SUBCUTANEOUS INJECTION OF GELATIN.

GERULANOS (*Deutsche Zeitschrift f. Chir.*, Bd. 61, Heft 3 and 4) reports the case of a woman, aged forty-seven years, with a

negative family history, who presented herself for treatment with the statement that during the past seven years she had frequent attacks of hoarseness, and that during the last year the hoarseness had become permanent, and that, in addition, she had difficulty in breathing. Examination showed the epiglottis to be normal, but the entire larynx was markedly inflamed. The right ventricle was edematous, and in the median line of the larnyx were smooth, shining protuberances the size of millet seeds. The right true vocal cord could not be plainly seen. The left ventricle and left vocal cords were also edematous and more or less covered with protuberances. The upper half of the vocal cords were markedly thickened, especially in that portion opposite the cricoarytenoid region.

The diagnosis of extensive carcinoma of the larynx being made, operation was decided upon for its relief. In order to lessen hemorrhage a hypodermic injection of a sterilized solution of gelatin (gelatin 4 parts, water 200 parts) was made into the upper portion of the right thigh, two hours before the operation. Anesthesia having been induced by chloroform, an incision was made in the median line from the hyoid bone upward. The thyroid isthmus was then tied off and separated, after which an incision was made in the trachea. Examination of the larynx, after its division, showed that the cancerous process was so extensive that total extirpation was indicated, and it was then performed. The larynx was separated from the esophagus, the trachea diagonally separated in the upper half, and then the upper portion, with the larynx, was fully removed from the esophagus. The entrance to the larynx from the pharynx was cut off close to the upper half, and then the resulting wound was closed diagonally in the median line with alternate catgut and silk sutures. Over these a second layer of catgut sutures was applied, and the operation completed by sewing the edges of the stump of the trachea to the edges of the skin wound. The gelatin injection proved of service during the operation, as the parenchymatous bleeding was but slight. After operation the condition of the patient was most satisfactory in every way.

On the evening of the day of operation the patient had a chill, which was followed by a rise of temperature to 38.2° C. The next day there was a distinct area of redness at the point where the gelatin injection had been given. This area was about a hand's width in breadth and extended toward the gluteal region; though its limits were irregular, at the same time they were distinct and sharply defined. The area of redness was painted with collodion, and wet compresses were applied. On the next day the temperature dropped to 37.3° C., but the area became more red and elevated. On the following day the patient became very restless, and the temperature ranged between 38.2° and 38.8° C. During the first two days after the operation, nourishment was given by enemas, but after that it was administered by the mouth. The area of inflammation became gangrenous, and compresses soaked in boracic acid solution were freely applied.

On the sixth day after the operation, when the wound was dressed, a line of demarcation was plainly visible and the wound was discharging freely. There were no evidences of any local extension of the inflammatory process, the wound in the throat was in excellent condition, and the patient's general condition showed marked improvement. In the evening of the same day the patient complained of pain in the back, for which no reasonable explanation could be advanced. Later clonic convulsions came on, but they soon became tonic and involved the muscles of the back and legs. Soon afterward clonic convulsions affected the arms, and in the morning a full dose of antitoxin was administered, but within the next half-hour the patient died.

ETIOLOGY AND TREATMENT OF CONGENITAL WRYNECK.

FRIDBERG *(Deutsche Zeitschrift f. Chir.,* Band 61, Heft 3 and 4), after reporting a series of cases in detail, states that those cases in which there was a progressive metamorphosis responded well to the application of poultices. Under this treatment the swelling disappeared and the affected muscle soon returned to the normal. In cases of complete "caput obstipum" a good result can hardly be expected from this conservative method of treatment, and so operation is required for its relief. The operation of subcutaneous tenotomy having been abandoned by most surgeons as a method of treatment for these cases, the choice of operative procedure is between the method of

Volkmann (open division of the affected muscle), and that of Mikulicz (a partial resection of the affected muscle). In the greater majority of cases the Volkmann method will prove satisfactory, but it should not be forgotten that the condition may return, as was the case in some of the series reported by Stumme and Hartmann. In very mild cases and in girls one should try subcutaneous tenotomy before proceeding to the open operation, because it will leave a much smaller scar. In some cases, especially in old people, in whom the disease is slight, a plastic extension or lengthening of the sternocleidomastoid muscle may result in a cure. The technique of this operation consists of exposing the muscle affected by a suitable incision, after which the muscular fibers should be separated lengthwise into two equal portions, which should then be divided, and the long muscle fibers should be brought together with sutures. The author reports four cases in which this method was used—in two cases with success, but in the other two resection had ultimately to be performed. The after-treatment of the resection cases should be the usual orthopedic treatment of this class. In those cases in older children, in whom a fixed cervical scoliosis and a compensatory dorsal scoliosis is present, the appropriate after-treatment should be persisted in until recovery follows.

The author briefly states his technique to be: A small incision to expose the lower half of the sternocleidomastoid muscle, which is then loosened from its surroundings and divided. Resection of the diseased area is then performed, after which care is taken to secure exact hemostasis. The skin wound is then carefully approximated with sutures, a solution of iodoform in five-per-cent carbolic water is freely applied, and the wound is sealed with collodion. An aseptic bandage is next put on, after which the head is fixed in the proper position with a well-padded splint, which should remain in place for six or eight days, when the sutures are removed.

The author states that it is impossible to give the ultimate result in all the cases in which operation was performed, as three cases were not seen again after the skin wound had healed, and one case died soon after operation of a disease that was then epidemic. Of the other fifteen operated cases, thirteen made a complete recovery. Of these cases, two were the result of the plastic lengthening of the muscle, and the rest were treated by the resection method.

The author states in conclusion: (1) This condition, in the majority of cases, is the result of the delivery at birth, but in a few cases the condition has its origin *in utero*. (2) The microscopical and macroscopical picture is in all cases the same—that is, an interstitial myositis. It has not yet been determined whether this is a purely anatomical degenerative process in the affected muscle, or whether it is a true inflammatory process. (3) The best treatment is the division of the affected muscles, with more or less complete resection of the diseased area.

THE THERAPEUTIC INDICATIONS DERIVED FROM THE EXAMINATION OF THE URINE SECRETED BY EACH KIDNEY.

CASPER (*Centralblatt für Chir.*, No. 44, 1901) reports a series of cases in which the surgical treatment was distinctly indicated by examination of the urine from each kidney. The method of obtaining the urine was that of Richter, by which the secretion from the two kidneys is separately obtained at the same time. The functional power of each kidney is measured by the amount of nitrogen excreted in equal amounts of urine; by the amount of sugar artificially produced by the injection of phloridzin; and by the lowering of the freezing-point of the urine. In healthy kidneys the results from the two sides are the same, but in a diseased kidney the sum total is less on that side than it is on the other. The following case illustrates the value of this same procedure:

Mrs. E. was taken ill with renal colic characterized by fever, vomiting, bloody urine, and marked pain in the region of the right kidney. The pain recurred in October, 1900, at intervals of three days, but finally ceased on the passage of many small and one long calculus. Soon after it ceased she complained of pain and a feeling of pressure in the region of the left kidney. It was not true colic, but the pain radiated downward over the anterior abdominal wall. After any severe exertion blood appeared in the urine. Neither kidney was sufficiently enlarged to be palpable. The diagnosis of calculus in the left kidney was made, but the examination of the urine obtained from each side showed that the secretion from the left was healthy, while that

from the right contained albumin and blood, had a lowered freezing-point, and eliminated less sugar and nitrogen. As a result of this investigation the diagnosis was changed to calculus of the right kidney, which diagnosis was confirmed by operation. The patient recovered.

A second patient had pain in the right side of the abdomen, but no vomiting nor diarrhea. Examination showed that there was, on the right side, below the border of the ribs, a hard, slightly sensitive tumor, which, however, did not change its position during respiration. Examination of the urine demonstrated that the elimination of the two sides was quantitatively and qualitatively equal. The diagnosis of a tumor not involving the kidney was made. This was confirmed by operation, which showed the growth to be an adenoma of the suprarenal capsule.

The third case complained of pain in the left lumbar region. Ballottement could be elicited, but there was no tenderness. The diagnosis of enlargement of the left kidney was made. Examination of the urine showed it to be clear, acid in reaction, no red blood-corpuscles, a few epithelial cells, albumin, and a small quantity of phosphates. Catheterization of the ureters gave results which led to the conclusion that the tumor on the left side did not interfere with the functional activity of that kidney. Operation showed the presence of several cysts, some as large as a hen's egg, but they did not communicate with the pelvis of the kidney, and the renal substance was normal. The patient made a good recovery.

The fourth case complained of pain and a continuous sense of pressure in the right lumbar region. There was no fever, chills, nor vomiting. On examination, a tumor the size of a child's head, quite firm in consistency and apparently connected with the right kidney, could be distinctly felt. The diagnosis of hydronephrosis was made, but the examination of the urine showed it to be absolutely normal, and a specimen from each kidney showed that the eliminative power of each was so nearly equal that the diagnosis of hydronephrosis was set aside and operation decided upon. On puncture, the tumor was found to be full of very fetid pus, and further examination showed the presence of a large accumulation of pus behind the ascending colon. The patient made a good recovery.

A woman, aged thirty-three years, gave a history of having had six years ago an attack of hepatic colic accompanied by jaundice. Three years later she became pregnant, and during that period had attacks of severe renal colic on the left side. After delivery, a large number of renal calculi were passed. Soon afterward she again became pregnant, and again had attacks of left-sided renal colic. During these attacks the amount of urine was decreased. Six months later the patient had a severe attack of pain in the region of the right kidney; the urine diminished, and a tumor could be plainly felt. An examination of the two urines showed that the right kidney was not at fault. The tumor on the right side was then diagnosed to be the result of gall-stones, and any operative interference with the kidney was consequently not advised. Shortly after this examination the patient had an attack of jaundice.

Three other cases are reported in which the symptoms pointed to renal calculi, but in which the examination of the urine gave negative results.

The author states in conclusion that the catheterization of the ureters in conjunction with the functional investigation showed in the first case the side that was diseased, a most important piece of knowledge, that could not otherwise have been obtained. In the second and third cases it was possible to state that the kidney itself was not involved. In the fourth case the differential diagnosis between a tumor of the kidney and perityphlitic abscess was made, while in the fifth case hepatic colic was diagnosed from renal colic. Casper believes that in these cases the catheterization of the ureters and the investigation of the functional activity of the kidneys proved of the greatest value; it is particularly desirable in those cases of kidney or abdominal surgery where the diagnosis is difficult or obscure.

INTESTINAL RESECTIONS.

FUCHRIG *(Deutsche Zeitschrift für Chirurgie,* September, 1901) presents a statistical study of the cases of intestinal resection performed during the last twelve years in the first surgical clinic of Vienna.

Resection of the intestine was employed in seventeen cases of carcinoma. In each of these the tumor originated in the large

intestine: Nine were in the cæcum, two in the ascending colon, one in the hepatic flexure, two in the splenic flexure, and three in the sigmoid flexure. The patients varied in age from thirty-two to sixty-five years, twelve being men and five women. End-to-end anastomosis was performed in eight of the cases, lateral anastomosis in five, and lateral implantation in four.

There were eight deaths, a mortality of 47 per cent, following operation. One patient died of sepsis, five of peritonitis, one of degeneration of the cardiac muscle resulting directly from the operative shock, and one patient died outside the hospital five weeks after operation, of an unknown cause.

Nine patients recovered from the operation, but one of them died of recurrence a year later. Two patients were well and free from recurrence three years, and one patient eight years after operation. Another patient led an active life for eight years after operation, and then died from an unknown cause. The four remaining cases are too recent to afford statistics of the remote results of operation.

Resection of the intestine was performed in nine selected cases of tuberculosis, in which obstructive symptoms were present, but the intestinal lesion was limited, and the lungs were sound or but very slightly involved. In two cases the ileum was the seat of the disease, and in seven the cæcum. The age of the patients ranged from twenty-three to fifty-seven years. Seven cases occurred in women and two in men. The intestine was reunited by end-to-end anastomosis twice, by lateral implantation twice, and by lateral anastomosis five times. There was one direct operative death from suppurative peritonitis, and two other patients died of general tuberculosis shortly after operation, giving a general mortality of 33 1/3 per cent. The remote result in one case was unknown. One patient had a local recurrence three years after operation. Two patients, after two years, so far as can be demonstrated, are free from recurrence. They have gained in weight, but are still subject to attacks of colic at rare intervals. One patient is still well seven years after operation. The remaining case was not so satisfactory, as the disease process in the lungs and intestines proceeded rapidly onward after operation. The impossibility of reduction in two cases of invagination, and the fear of gangrene in a third, necessitated the resection of the affected gut in all three cases. In one case lateral implantation was employed, and in two lateral anastomosis. Two patients recovered, but the third died of peritonitis.

Portions of the intestine were resected in four cases of intestinal fistula, in one of preternatural anus, and in two cases of stenosis due to adhesions and kinking. The intestine was reunited in five cases by end-to-end anastomosis, and in two cases by lateral anastomosis. Four patients were cured, but the remaining three died as a direct result of operation.

Threatened or existing gangrene of incarcerated intestine led to a resection of the affected part in twelve patients. In nine of these the incarcerated gut was contained in hernial sacs, eight being femoral and one umbilical. In the three remaining cases, the incarceration occurred within the abdominal cavity. End-to-end anastomosis was used in nine cases, lateral implantation in one, and lateral anastomosis in two cases. Four patients recovered, two died of pneumonia and six of peritonitis. Three of the latter resulted from imperfect suturing.

Out of a total of forty-eight cases of intestinal resections, twenty-three patients died, giving a general mortality of 47.9 per cent, but only nineteen deaths (39.5 per cent) were a direct result of the operation.

In the small intestine the end-to-end anastomosis, either by the use of silk sutures or the Murphy button, was employed in the majority of cases. Lateral implantation was the operation chiefly used in the cæcal region, and lateral anastomosis was the operation of choice for the large intestine. The last two methods gave the best results. The use of the Murphy button, usually reënforced by a row of peritoneal sutures, proved a very satisfactory method in twelve cases, with only three deaths.

The end-to-end anastomoses by use of sutures were the least gratifying, as six of the nineteen cases developed peritonitis. The interrupted suture gave better results than the continuous.

SURGICAL TREATMENT OF ASCITES.

After a study of five cases, experiments on thirty dogs, and a review of the literature on the above subject, Ito and Imi *(Deutsche Zeitschrift für Chirurgie,* December, 1901) believe that mechanical obstruction of the portal circulation is the

cause of ascites in cases of hepatic cirrhosis, and that operative procedures for the relief of the ascites should be directed toward diverting a portion of the portal blood from the liver. It has been proved that the greater part of the blood from the portal circulation can be turned directly into the general venous circulation without producing any metabolic disturbances.

For those cases of ascites due to cirrhosis of the liver which are rebellious to medical treatment, operation affords the only prospect of relief. Paracentesis abdominis is not curative, and patients generally succumb after it has been employed a few times. Surgical treatment to be of any value must provide for the free formation of extensive adhesions of the liver, spleen, intestines, and other intra-abdominal organs to one another and to the abdominal parietes. Ito and Imi consider adhesions of the great omentum to the parietal peritoneum a matter of minor importance. Whether these omental adhesions are intraperitoneal or extraperitoneal makes but little difference. The production of adhesions within the abdomen is encouraged by rubbing the peritoneal surfaces of the various organs and the abdominal walls by means of a dry gauze pad. In addition, long strips of sterile gauze are introduced through the lower angle of the incision, and are packed in the angles and cavities between the coils of intestines and other organs. The peritoneum should not be rubbed too vigorously, or profound shock will result. The gauze strips should be removed in twenty-four hours. If allowed to remain longer they become adherent, subject the patient to the dangers of infection, and also weaken the patient by permitting the escape of great quantities of ascitic fluid.

By the development of new blood-vessels in the adhesions, a portion of the portal blood will find its way directly into the general circulation, the blood-pressure in the liver will therefore be diminished and the ascites will subside. In one case it was observed that the disappearance of the ascites after operation was coincident with the appearance of dilated veins over the anterior surface of the abdomen and chest.

In order to obtain a successful result by this operation it is essential that some of the liver cells still retain their functional activity.

The best results are obtainable by early operation, the earlier the better. Many of the results of the past have been unsatisfactory because the operation was too long delayed.

CHANGES IN THE KIDNEYS AFTER LAPAROTOMY.

Von Brunn (*Archiv für Klinische Chirurgie*, Bd. 65, Heft 1) made post-mortem examinations of the kidneys in a series of seventeen operative and two non-operative cases of various intra-abdominal conditions. He found that simple opening of the peritoneal cavity and operations on the intestines were not sufficient in themselves to produce any changes in the structure of the kidneys. Neither did he find any structural changes resulting from the use of anesthetics in his cases, although in several instances there was sufficient functional disturbance to produce albuminuria. Necrotic changes were found in the kidneys of eleven cases that had suffered from peritonitis. One of these patients did not undergo operation, one had peritonitis before operation, and nine developed it after some form of laparotomy.

On macroscopic examination the cortex of the kidney on cross-section was found to be but little or not at all increased in thickness. Its general color was a cloudy pale-gray, but a characteristic brownish tint, that was generally present, gave a hint of the minute changes that had occurred. Microscopical examination of the renal tissue was made after staining with hematoxylin. The cortex presented a gray color and contained numerous round or oval areas of necrotic epithelium which possessed a finely granular or homogeneous appearance, and was derived from the convoluted tubules. The glomeruli did not show any structural changes, but a few of them contained a granular mass of coagulated albumin just beneath their capsule. The epithelium lining the ascending limbs of Henle's loops presented changes similar to those observed in the convoluted tubules. A moderate degree of hyperemia was usually found in the kidneys examined. The capillaries themselves, as well as the connective tissue stroma, and the remaining renal epithelium, presented no alterations.

In some cases the degenerative process was less marked, and in some few it was even more pronounced. Necrotic changes similar to the above were seen in a case of pancreatitis and fat necrosis, and in a second case of bronchopneumonia and fatty degen-

eration of the liver. The same alterations were observed in a dog that died of acute intestinal obstruction. In all three of these cases the renal changes were undoubtedly produced by the action of toxic products circulating in the blood.

The kidneys were examined and found unaltered in a series of cases in which laparotomy had been performed, but only a localized abscess or a completely healthy peritoneum was discovered at autopsy.

Von Brunn concludes that necrosis of the renal epithelium following laparotomy is almost without exception dependent on the presence of peritonitis, but he believes the same changes can result from other forms of severe intoxication.

THE THERAPEUTIC VALUE OF BACTERIOLOGICAL BLOOD EXAMINATIONS IN SEPTICEMIA.

CANON *(Deutsche Zeitschift für Chirurgie,* September, 1901) considers the bacteriological examination of the blood a valuable procedure in certain surgical conditions. From observation of patients and from the evidence of his own and others' experiments on animals, he concludes that both the pyogenic bacteria and their toxins are concerned in the production of septic conditions.

He thus describes the various stages leading to pyemia: A suppurative wound takes on new activity, and more pyogenic cocci develop which, with their toxins, enter the blood. The cocci are killed at first by the bactericidal action of the blood. During this period only dead, poorly-staining bacteria can be demonstrated by blood examination. Meanwhile the bactericidal power of the blood is being destroyed by the absorbed toxins. More cocci find their way into the blood, and some few of them survive and can be grown on culture media. During this stage, secondary foci may develop from which more cocci are taken up by the blood, the bactericidal action of which is now destroyed. Blood examination now discloses fairly numerous bacteria. The process continues: the bacteria become adherent to the capillary walls, multiply, and are carried off in the blood-current to form metastatic abscesses and rapidly destroy the general organism. During these latter stages the bacteria can be found in large numbers in the blood and internal organs.

Canon believes that recovery is extremely rare, when the process advances as far as the stage in which the bacteria become attached to the capillary walls. If the toxins play the important rôle in any individual case death may ensue before many organisms are found in the blood. He found that the organisms were more numerous after a chill, and that a marked increase in their number was nearly always indicative of death in from one to seven days.

The specific organism of the disease has been found in pneumonia, typhoid fever, plague, and in influenza; hence a blood examination will often clear up the diagnosis in these cases and also differentiate them from septic processes.

Bacteriological examinations of the blood have proved of value in determining which one of the antitoxin sera to give in cases where the disease focus occurred in the internal organs, and also demonstrated whether or not the use of the serum was accomplishing its object. Such examinations have also afforded valuable aid in determining the question of operation and have indicated the prognosis in many cases.

TUMORS OF THE LATERAL RETROPERITONEAL REGION.

GÖBELL *(Deutsche Zeitschrift für Chirurgie,* September, 1901) describes the normal and pathological anatomy of the lateral retroperitoneal regions. He gives the result of a careful analysis of the various tumors reported as occurring in these regions.

The pure lipomas were observed as rarities. They were noted chiefly in old age, and were more frequent in women than in men (6 to 1). They often reached an enormous size. When the lipoma originated in the perirenal fatty tissue, the kidney was found embedded in the mass. The kidney was rarely surrounded, but more commonly displaced upward and inward in those lipomas that had their origin in the suprarenal or retroperitoneal fatty tissues. Of four lipomas reported, three occupied the lumbar region, one the iliac, and two the iliac and lumbar regions.

The pure fibromas developed from the kidney capsule and subperitoneal tissues. They grew slowly and presented the usual characteristics of these tumors. Even very large fibromas produced no abnormal symptoms beyond their size and weight. Of six

cases, four were in the iliac and two in the iliac and lumbar regions.

The myxomas occurred primarily as such, or developed as a result of the degeneration of other forms of tumor. They originated chiefly in the perirenal tissue, but did not involve the kidney. One was lumbar and another iliac and lumbar.

The myxolipomas and fibrolipomas were observed as tumors of great size. One weighed 63 pounds. These growths were soft, lobulated, yellowish in color, and on section appeared made up of various nodules or cysts. The fibrolipomas were found chiefly in old women. In the four cases reported, the tumor occupied the lumbar region.

Myxolipomas occurred equally in both sexes during middle age: seven were found in the lumbar region, and two in the iliac and lumbar.

Sarcomas were more frequent than other tumors. The spindle-celled sarcoma originated in the fasciæ, in the kidney capsule, and in the periosteum of the ilium. They grew rapidly, and had nodular surfaces. The round-celled sarcomas were glandular tumors. They were mostly nodulated; some were soft, some hard, and others pliable. On section they varied in color from a silvery white to a blood red.

The myxosarcomas developed from the perirenal or subperitoneal tissues. Some had smooth, rounded surfaces, others were covered with nodules. On section they appeared reddish-gray.

The sarcomas are prone to invade the surrounding tissues, especially the muscles. When the veins are affected, thrombosis, embolism, and thereby metastasis occurred. The kidney and suprarenal gland were protected from involvement by their capsules. They were observed most frequently from twenty to thirty years, and from fifty to sixty years; least frequent before twenty and over sixty years of age. Sarcomas occurred about equally in the two sexes, but other tumors were found more frequently in women than in men (59 to 36).

Other rare tumors occurring in the lateral retroperitoneal regions were chondroma, teratoma, carcinoma, ovarian cystoma, and dermoid, blood, and serous cysts.

The symptoms of lateral retroperitoneal tumors which caused the patients to consult a physician were often slight. Some patients had experienced only slight pain and mild disturbances of intestinal function. Many women frequently thought their condition to be that of pregnancy. Some patients merely had pain and a sensation of weight in the abdomen, which led to the discovery of the tumor. Others had swelling of one or both legs and pain.

In lipomas patients had frequently observed no other symptom than a gradual increase in the size of the abdomen, yet on examination they presented an enormous, uniformly distended abdomen, covered with striæ. Dulness was found on percussion of the flanks, and at times seeming fluctuation was present, which led to a mistaken diagnosis of ascites. In another case the lipoma appeared as a soft, poorly defined tumor, barely perceptible to the palpating fingers. The urine in these cases was generally normal.

The fibrolipomas had a firmer consistency than the pure lipoma and myxolipomas, and were easy to palpate because of their large nodules. The lipomas and fibrolipomas increased slowly and uniformly in size. The myxolipomas grew slowly at first, but later on would suddenly enlarge very rapidly.

The fibromas grew slowly, but were sooner observed by the laity because of their hardness. They were circumscribed, had either a smooth or an irregular surface, and were often movable.

The myxomas were very elastic, gave evidence of doubtful or distinct fluctuation, and the exploring needle obtained a viscid or mucoid fluid. They grew rapidly.

The chondromas were very hard, grew slowly, and usually originated in the pelvis.

The dermoid cysts were painless and frequently non-fluctuating. The ovarian cysts gave marked fluctuation. The serous cysts could be distinguished from the above only by their thinner walls and by examination of the fluid contents. The tumors of the suprarenal gland were mostly soft and irregular, and at times fluctuating.

The round-celled, spindle-celled, and fibrosarcomas formed firm, large, immovable, irregularly nodular masses, with fluctuation present in places.

Rapid emaciation was a characteristic of the myxosarcomas. These sarcomas appeared elastic, hard, and immovable.

For all lateral retroperitoneal tumors the most important symptoms were those dependent on their situation and their relation to neighboring organs. From an analysis of

twenty-seven cases, Göbell found that the position of the distended colon in front of the tumor was the most valuable sign of the growth being a retroperitoneal one, but beyond this general localization no further accurate information as to the site of the tumor could be obtained by observing the exact relation of the colon to the tumor.

Among the pressure symptoms in lateral retroperitoneal tumors were regarded:

1. Swelling and edema of legs.

2. Venous stasis and varicose veins of the whole region below the position of the tumor. Hemorrhoids, varicocele, and varicosities of the abdominal veins were noted. Some cases suffered from cramps in the calves.

3. Variously localized pains and paresthesias, such as pain radiating along the course of one nerve—for instance, the crural nerve—or pricking pains in the foot, extending up the leg, or, again, pain in the back radiating into the testicle.

4. Intermittent hydronephrosis was observed in some cases.

In only two out of twenty-five cases of retroperitoneal tumors did the urine show pus or albumin.

It was usually an easy matter to differentiate the intraperitoneal from the extraperitoneal tumors when the growth was small or medium-sized, or when it occurred in the iliac region. But, occasionally, under these circumstances, and as a rule in large tumors, the question was a difficult one to decide. A history of the case and a consideration of the above mentioned characteristics of the various tumors aided in making the diagnosis in some cases.

The differentiation of tumors of the kidney and suprarenal gland from other growths of the lumbar region was even more difficult.

If catheterization of ureters demonstrated an equal amount of normal urine being voided by each kidney in the presence of a retroperitoneal cyst, it was considered presumptive evidence of the cyst not being a renal one. This deduction is open to error, however, as it is rare to secure a normal quantity and quality of urine from the ureter in cases of hydronephrosis. On the other hand, the urine may be abnormal from the ureter on the affected side when the cyst is extra-renal.

Symptoms of pressure on the ureter are less likely to occur from renal tumors than from other lumbar tumors. But if the pressure symptoms of the ureter are due to a renal tumor, there are usually present a sufficiency of other renal symptoms to indicate that the kidney is the site of the disease process. Bleeding from the ureter in cases of lumbar tumor is suggestive of renal involvement.

After analyzing eighty cases of various lateral retroperitoneal tumors in which the terminations of the cases were known, Göbell concludes that the prognosis in cystic tumors is good provided operation is not delayed too long. A very bad prognosis should be given in lipomas and in the lipomatous mixed tumors, in sarcoma, and in tumors of the suprarenal gland. But better prognosis may be expected in the remaining tumors.

The only treatment to be considered for the lateral retroperitoneal tumors is early extirpation. The extraperitoneal operation is the preferable one for small and medium-sized tumors. This operation is more difficult to perform than the transperitoneal operation, but it is to be preferred because it produces less injury to the peritoneum and mesocolon. The prognosis in operations on large retroperitoneal tumors is bad, yet some cases, mostly of benign tumors, have recovered. The important consideration before deciding to operate is therefore to establish the nature of the growth. For this purpose Bardenheuer's extraperitoneal exploratory incision is advisable, but many surgeons prefer to explore by means of an intraperitoneal incision. These latter, if the case is an operable one, either remove the tumor through the exploratory incision or make a new incision and attack the tumor by the extraperitoneal route.

For removing tumors of the lumbar and iliac regions the best incision is one beginning in the angle between the twelfth rib and the sacrolumbar muscle, passing obliquely downward to the anterior superior iliac spine, and then forward parallel with Poupart's ligament. For iliac tumors, the lower half of this incision is sufficient.

In thirty-six operations for lateral retroperitoneal tumors the kidney was so involved that it had to be removed in sixteen cases; hence it is important to decide the functional ability of the opposite kidney before operating. If the ureter is but slightly involved, it is good surgery to resect the affected portion and reunite the cut ends.

TUBERCULOSIS OF THE ANKLE-JOINT.

KÖNIG *(Archiv für Klinische Chirurgie,* Bd. 65, Heft 1) publishes the statistics collected by Maass on 167 cases of tubercular arthritis of the ankle treated in the Göttinger clinic between 1878 and 1892.

Of those cases in which the extent of the disease process was specified, abscess and sinuses had developed in sixty-eight, and suppuration without the formation of sinuses in forty, while in thirty-nine cases no suppurative changes were present. The comparative density of the bone was noted in only thirty-nine cases. In twenty-three cases softening had occurred; in five, pathological hardness was found; and in eleven the bone was abnormally soft in one part and hard in another. In twenty-four cases the cartilage of the joint was unaltered, slight ulceration was present in five, extensive separation was observed in thirty, the cartilage was for the most part destroyed in thirty-eight, and its condition was not recorded in the remaining cases. Lesions of the bone were present in seventy-six and absent in fifty of the observed cases that came to operation. One-half of the bone lesions were located in the astragalus, and the remaining half were about evenly divided between the tibia and fibula. The ankle-joint alone was affected in seventy-six patients, and the ankle, as well as other joints of the tarsus, in sixty-six.

The degree of swelling about the joint was found to bear a direct relation to the extent of the lesion in the great majority of cases.

Conservative treatment was employed for a longer or shorter time in thirty-eight cases. The injection of iodoform emulsion had not come into general use at the time these statistics were collected, and the local treatment consisted principally of the application of plaster casts. Only two patients were cured by this treatment, one died of phthisis after being somewhat benefited, twenty-nine finally required operation, and the final result in the remaining cases could not be ascertained.

Operations were performed on 156 cases without a death resulting directly from the operation.

In only four cases was the disease sufficiently limited to permit of simple arthrectomy. All four patients were cured, but they all had some limitation of motion, atrophy, and shortening, in spite of the fact that no bone was removed.

Arthrectomy with removal of diseased bone was considered a sufficiently complete operation in six cases, but only two were cured, one grew steadily worse and died of phthisis, and three required another operation.

In nine cases the affected portions of bone were removed without opening the joint. Four of these patients were cured, three were unimproved, and the final result in two cases was unknown.

The ankle-joint was resected by Langenbeck's method in eleven cases. In none of these cases was an effort made to preserve the epiphyseal line, and in four the entire astragalus was removed. In three the final result was not given; in two amputation became necessary; while in the remaining six the disease was eradicated, but five of the patients had so much shortening, deformity, and weakness of the joint, that the result was far from satisfactory.

In eighty-seven the ankle was resected through two anterior longitudinal incisions by König's method, and the epiphyseal line was preserved. In forty-six of these cases the entire astragalus was removed. The foot ultimately required amputation in eleven; fistulæ are still present in two, but both patients have serviceable feet. In seventeen the functional result was excellent; these patients have but little shortening and deformity, and are able to walk without difficulty. The final result could not be ascertained in sixteen cases.

Resection of the tibia and fibula with only the articulating surface of the astragalus was performed in forty-one cases. Five of these patients died shortly after operation, two submitted later to an amputation, eighteen were cured and have good serviceable joints, and five have fairly useful joints but still have a fistula or require some support in walking. The ultimate result was unknown in the remaining cases.

The greatest amount of shortening observed in adults who had been operated on by the König method in childhood was $8\frac{1}{2}$ centimeters after simple resection, and 9 centimeters after complete removal of the astragalus. A shortening of 13 centimeters occurred after one of the Langenbeck excisions.

Amputation was performed in fifty-four

cases; thirty-six being primary and eighteen secondary.

After a study of the above statistics, König concludes that resection of the ankle-joint is not a dangerous procedure, the after-treatment is simple, and the final result is satisfactory in cases operated on by his method. He advises that resection of the ankle should be performed in all cases where the tubercular disease is not too extensive to permit of this operation.

WOUNDS OF THE ABDOMEN.

Any wound that may penetrate the abdomen, says WINSLOW *(Maryland Medical Journal,* February, 1902), should be carefully explored, not by a probe, but by incising the track of the bullet or knife.

The patient should be conveyed to a suitable place and into competent hands at once. A dirty probe should not be inserted, nor should an uncleansed finger be inserted into the wound; but some sterile gauze or clean cloth should be laid over the wound until the beginning of more radical treatment.

When the case reaches the surgeon, it should be cleaned and prepared at once for an operation. An anesthetic should be administered and the track of the bullet or knife explored, and if it leads into the peritoneal cavity, laparotomy must be done. The incision, in some instances, especially in stab wounds, may be made at the site of the entrance wound. In other cases a median laparotomy may be preferable, but this must be left to the judgment of each individual operator. When the abdomen has been opened, the lesion of the stomach may be exposed at once, and, if it is situated on the anterior surface of the organ, may be easily sutured. If the injury involves both surfaces of the stomach, the great omentum must be torn through in order to get at the posterior wound. When the wound is situated high up toward the cardiac orifice or at the fundus, much difficulty will be experienced in suturing the perforations; it may be necessary to make an additional incision in order to do so, or to divide one or more ribs. Silk is the best suture material, and it matters little what form of suture is made use of. After closing the perforations in the stomach, careful search should be made for injuries to other organs; if any are found, they must receive appropriate attention, all bleeding points being controlled by ligature, clamp, or pressure. The peritoneal cavity, if there has been any escape of the contents of the stomach or hollow viscera, must be carefully cleansed by mopping and irrigation. When there has been contamination of the peritoneal cavity, gauze drainage should be employed, though this is a moot point with surgeons. Some surgeons, after carefully cleansing the peritoneum, close the abdominal incision tightly.

The after-treatment is very important. Nothing whatever should be taken into the stomach for four or five days, by which time the wound ought to be firmly healed. Thirst, which is very distressing, should be alleviated by the instillation of normal salt solution into the rectum, one-half a pint every four to six hours, and by subcutaneous infusion of the same solution, one pint twice daily. Nutritive enemata of milk, sherry wine, and eggs should also be given three or four times in the twenty-four hours. After four or five days, beef juice or predigested liquid food, or milk with lime water, may be administered in small quantities, gradually increasing the quantity taken. Solid food ought not to be allowed for two to three weeks.

The experience of Winslow indicates that incised wounds of the stomach are less fatal than those caused by shot. By timely operation more than fifty per cent of such injuries ought to be recovered from. The dangers are, first, from hemorrhage and shock, and later from general peritonitis and sepsis. Gangrene, as in one notable case, may be a complication.

ORTHOFORM AS A LOCAL ANESTHETIC IN TUBERCULOSIS OF THE LARYNX.

In the treatment of tuberculosis of the larynx orthoform, says WILLIAMS *(Bristol Medico-Chirurgical Journal,* December, 1901), is proving a great rival to cocaine as a local anesthetic.

Sendziak finds that it is really an excellent drug, which, applied either in the form of powder or in connection with menthol (Freudenthal: Menthol, 1.0 to 5.0, 10.0 to 15.0; ol. amygd. dulc., 30.0; vitelli ovorum, 25.0; orthoform, 12.0; aq. dest., q. s. ad 100.0; fiat emulsio), by means of brushings or laryngeal syringes, produces anesthesia and relief from pain, lasting usually a couple of hours, and at times as long as twenty-four

hours. Sendziak has not only noticed an analgesic action in cases treated with orthoform, but also a favorable action upon the tuberculous lesions themselves, so that he regards "this drug as a very precious acquisition in the local therapy of laryngeal tuberculosis." Similar encomiums on the beneficial effect of orthoform have been expressed by McCall, especially when the drug was associated with resorcin. This combination, in proportions varying from one-third to two-thirds, applied every second day, had given him excellent results in cases with ulceration and exuberant granulations, such cases as are usually curetted. In flat superficial ulcerations, such as occur in the epiglottis, for instance, orthoform, combined with bismuth, morphine, or cocaine, answers better, in his experience.

THIOSINAMIN IN CHRONIC JOINT AFFECTIONS.

Since thiosinamin injected hypodermically has caused the disappearance of keloid tissue and scar tissue in the cornea, UPSON (*American Medicine*, Jan. 25, 1902) has felt it worth while to try its effects on fibrous formations in other parts of the body. Its use in chronic rheumatism seemed to him especially worthy of investigation.

In one case, that of a man suffering severely from a painful nerve situated in an amputated right thigh, it was supposed that the pain was due to connective tissue pressing on the nerve fibers. Thiosinamin was prescribed, one grain in a capsule being given after each meal. At the end of a week the patient was much improved. This improvement continued for several days, when the pain returned despite a vigorous use of the drug.

In another case, that of a man who had a stiff wrist, the effect of an attack of acute rheumatism, the improvement was progressive and continuous. One-grain capsules were taken after each meal, with the idea that fibrous pressure in and about the joints was interfering with the nerve supply, as well as hampering the mobility of the wrist.

For chronic arthritis in the elbow-joint (the third case), associated with marked enlargements, causing trophic disturbances from pressure on the nerve trunks, and especially the ulnar nerve, the patient was given three courses of treatment of six weeks each. After the first course of six weeks the enlargements about the joint were smaller.

Referring to the above cases, and three other cases given brief mention, Upson remarks that the results are by no means conclusive, but that the drug will be found useful in aiding the absorption of fibrous deposits due to rheumatism.

TREATMENT OF MOVABLE KIDNEY, AND KIDNEY OPERATIONS.

Though the palliative treatment of movable kidney is only fairly successful, operation should be advised only in those cases where the discomfort is extreme or where complications exist. This operation should aim at fixing the organ firmly in the loin.

A most simple and satisfactory plan, according to RIDDELL (*British Medical Journal*, Feb. 1, 1902), is to separate the kidney from its fatty capsule by free dissection with the finger, to irritate the fibrous capsule by scratching with a scalpel, to fix the lower part of the kidney by two sutures of catgut, silk, kangaroo tendon, or silkworm-gut to the lumbar muscles and aponeurosis, and, most important of all, to insert alongside the kidney large drainage-tubes or packs of gauze, which are left in for a week to produce aseptic inflammation and granulation. Alternatively, instead of sutures, bridles of gauze may be passed over the upper and lower poles of the kidney, and tied over gauze packing running alongside the kidney, the wound healing up by granulation. Excellent results have followed the first method, but the second obviates the alleged risks of suture, namely, urinary infiltration, abscess of the kidney, and cirrhosis of the kidney.

KELLY, in the same journal, relates that he finds the ureteral catheter of value in kidney operations, especially those for renal calculi, in two ways: In the first place, before the operation the catheter is passed up the ureter into the pelvis of the kidney, which is then thoroughly irrigated and washed out by letting water flow into it from a funnel, in this way distending the pelvis. The water then escapes down the ureter into the bladder, and out into a receptacle through a catheter introduced through the urethra. Boracic acid or a weak carbolic acid solution may be run through the kidney in this way, washing away the pus, and rendering the surfaces relatively clean. The

second use of the catheter is after washing out the pelvis to leave it *in situ*, and then to expose the kidney by the lumbar incision. Before incising the kidney, however, fluid is forced rapidly into the renal pelvis, so as to distend the pelvis and cause the kidney to swell up, making prominent certain surface landmarks which serve as a guide for a correct incision into the organ. If the kidney is grasped in the full hand during the distention the exact position of the calyces can be detected, as it alternately swells and collapses as the fluid is forced in. If one part is sacculated, or if the cortex is thinner at one point, this is also at once evident, and the incision is best made there. In normal kidneys this distention is almost imperceptible on the convex surface, but where calculi are present the anteroposterior diameter is sometimes increased 1.5 centimeters.

The lobules of the kidney are made prominent, and the fibrous vascular septa between them are readily distinguished when the kidney is distended. If the kidney is cut into in this distended state, there is less injury to the cortex, and the operator is at once made aware of the opening into the pelvis by the sudden gush of water. A small stone is sometimes washed out in this way, saving a painstaking search and further cutting. The irrigation of the pelvis of the kidney out through the incision by means of the renal catheter can be kept up as long as the catheter is left in and the wound remains open.

The best place to incise a normal kidney is down through the lateral portion of the posterior pyramids between the anterior and posterior vascular trees. The worst possible incision is the one which follows the course of or wounds largely the vascular column found in the cortical septa between the pyramids. In order, then, to make the incision correctly, one must cut parallel to Broedel's line* and parallel to the posterior surface of the kidney, leaving about three-fifths of the kidney anterior and two-fifths posterior to the incision. The cut must be extended in a parallel direction to the posterior surface, and not angling toward the center of the kidney, as one would naturally incline to do.

Through such an incision, laying open the calyces, both anterior and posterior systems of calyces can be readily explored.

Where the kidneys may be more or less abnormal the incision should pass parallel to the longitudinal white line, one centimeter away from it, and on the same side of the kidney where the palpating finger feels the lesser number of vessels; in the majority of cases on the posterior surface, but occasionally anteriorly.

Where the renal pelvis is not divided, after extracting the stone, explore the remaining calyces with a little delicate steel curved handle attached to a blunt knife, which at once reveals the presence of even a small stone by the grating sensation conveyed. When a stone is found the blunt curved handle may be pushed up into the calyx and the incision made down through the prominent part of the corresponding pyramid, and the stone extracted in this way through a small additional incision, in case it cannot be lifted out with forceps through the original incision. In place of one long incision laying open the entire pelvis of the kidney, Finney has recommended two incisions into the upper and the lower poles separately, so as to spare the median portion of the kidney. Such a procedure of course is applicable only if we have to deal with a double pelvis, or if we are sure that an undivided pelvis is of simple formation and capacious; it is contraindicated where there is a pelvis of complex form with many pockets.

It is best, as a rule, not to try to remove a stone directly through the pelvis of the kidney without incising the renal tissue proper. Kelly would resort to this plan only where the stone is known to be a small one, and there is no inflammation or edema of the pelvis, and where the pelvis can be exposed, incised, and sutured without much difficulty.

Where it is advisable to close the wound into the kidney three sets of sutures may be used to advantage, one of fine catgut placed between the calyces, including the fat and fibrous tissues, without involving the mucous surfaces. By this means the pelvis is approximated.

The second series of sutures is made up of one or two series of mattress sutures intro-

*If the kidney is examined attentively it will always be found divided up into irregular areas (the bases of the pyramids) the size of the end of the thumb; these areas are bounded by lighter colored lines which are often slightly depressed. These whitish lines represent the columns of Bertini, which extend up between the pyramids forming the framework which supports and carries the vessels. The white lines come together in a longitudinal white line on the anterior surface, which Kelly calls Broedel's white line.

duced with a straight, slightly blunted needle, extending through the entire substance of the kidney. These give a perfect and sufficient control over bleeding. Finally, for perfect accuracy the capsule may be closed by a continuous catgut suture.

GALL-BLADDER AND DUCT OPERATIONS.

If the gall-bladder is to be opened, observes MIXTER *(Annals of Surgery,* January, 1902), it may best be secured by two ligatures passed through its wall by curved needles. Should there be a large quantity of fluid in the gall-bladder, it may nearly all be removed by means of an aspirating needle or trocar, and if there is reason to think that it is septic, the bladder is easily washed out without the escape of its contents. The bladder is then incised between the two ligatures, and gall-stones or pus are thoroughly removed by scoop, curette, forceps, or syringe.

Mixter believes in drainage in all cases. He argues that if there is no need for drainage the wound will close so soon that only a few days are lost; but if it is needed and not employed, the patient is lost. He ties a glass tube with a flaring end tightly into the gall-bladder, using a heavy silk ligature. The ragged end of the bladder is then trimmed away, and it and the tube are enveloped in a small packing. A rubber tube being attached, all the bile for days may be carried through the untouched and unsoiled dressing into a bottle hung below the bed.

To remove the gall-bladder, the peritoneum is divided at its reflection from liver to gall-bladder. The latter is then easily torn out of its bed with the fingers or with a blunt dissector till the cystic duct is reached, which can be tied and cut.

The stone, having been discovered by the examining finger, may be removed, according to its distance from the bowel and the feeling of the operator, either through the enlarged cystic duct, the incised common duct, the incised duodenum, or even by crushing by external pressure, this last method being, however, unsatisfactory.

Those cases where no sutures are used do as well as if not better than those cases where they are used, Mixter says.

A biliary fistula cannot be, and really should not be, closed unless the common duct is open.

It is suggested that finely divided gelatin, sterilized and perhaps mixed with a little adrenalin, might be used to prevent the hemorrhage occurring in profoundly jaundiced patients.

It is of the utmost importance in all cases, where the abdomen is opened and the patient is in good condition, that there should be a thorough examination of the gall-bladder and removal of the stones, if they are present, or as Mixter prefers, the gall-bladder itself.

LEUCOCYTOSIS IN APPENDICITIS.

In the depreciation of its diagnostic value, surgeons have probably overlooked the value of the leucocyte count in prognosis; this is the opinion of JOY and WRIGHT *(Medical News,* April 5, 1902), who have recorded successful results in 124 cases of appendicitis.

If the first symptoms of the disease are moderately severe, and the leucocyte count high, say over 16,000, operation should be decided on, and in those cases also where the count is from 12,000 to 16,000, but increasing on subsequent count in from four to eight hours. The operation may be postponed where the count decreases on second examination, though the operation is advisable for the sake of freeing the patient from the danger of all subsequent attacks.

If the symptoms are moderately acute at first, but become less severe, and the count is moderate and decreasing, operation may not be insisted on. The operation should be performed, however, if the count shows an increase.

Should the symptoms be very severe and continue, following a history of severe onset, and with signs of increasing toxemia, immediate operation is the only chance left if the count is moderate and decreasing. If it is moderate and stationary with the symptoms moderately severe, the case not being seen until forty-eight hours or more after the beginning of the attack, operation should be immediate.

In all of the cases operated upon, 110, the condition of the appendix showed intervention to have been warranted. Many of the cases would have been treated medically had it not been that the count decided the question and led to measures which, in some cases at least, undoubtedly saved life.

Joy and Wright remark that no arbitrary

set of prognostic values to be assigned to various degrees of leucocytosis can be constructed. The important point is to follow any scheme in which one learns to have confidence, provided the essential principle be preserved.

Reviews.

THE INTERNATIONAL MEDICAL ANNUAL. A Yearbook of Treatment. Twentieth Year.
New York: E. B. Treat & Co., 1902.

Year after year we have reviewed with words of praise this excellent although brief summary of medical literature for the preceding twelve months. Amongst other things that strike us as being particularly interesting in the present summary we find reference under "Atropine" to its value for the purpose of preventing circulatory failure during the administration of chloroform, and also for the purpose of preventing pulmonary edema after the administration of anesthetics. Some of the recent literature upon the use of wire in the treatment of aneurism is also published, although the article is not complete in the sense that it does not cover all the contributions that have been made during the past year to this important subject. The illustrations are—a very considerable number of them—in the form of colored plates, and are very good for a work of this character. Particular attention is paid to the epidemic of arsenical poisoning which has recently taken place in England, and also to some of the recent advances which have been made in the study of diseases of the blood. The plate which illustrates the chapter on the blood is a good one, although of course it is not as fine as some of the recent steel engravings which have been published on this subject. We regret to notice that in the chapter on the blood the author has ignored the use of the very excellent apparatus of Dare for the estimation of hemoglobin. A very large part of the book is devoted to remedial measures which have been introduced in the treatment of pulmonary tuberculosis and to recent studies which have been made in typhoid fever.

A REFERENCE HANDBOOK OF THE MEDICAL SCIENCES. By Various Writers. New Edition Completely Revised and Rewritten. Edited by Albert H. Buck, M.D. Volume IV. Illustrated.
New York: William Wood & Co., 1902.

We have already reviewed the preceding three volumes of this encyclopedic work. The present volume begins with the word "Ergot" and ends with an article upon "Infiltrations," and we understand that four more volumes will complete the series. As with its predecessors, so in this issue the colored plates seem to us unusually good. It is true that in one or two instances they deal with subjects which can scarcely be considered modern, as, for example, illustrations of the injuries produced by gunshot wounds during the War of the Rebellion, wounds which in their nature are very different from those commonly produced by the army rifles of to-day, and which are utterly and entirely different so far as hemorrhage and secondary results are concerned. The black and white illustrations are also exceedingly good in their execution and illustrate clearly the text which they accompany. We are glad to see that under the name "Ethylene Bromide" the distinction which is necessary between it and ethyl bromide is emphasized, the two substances being very different in their effects. Curiously enough, probably as the result of different writers contributing certain articles, the article upon "Ethylene Bromide," the least important of the two, is almost three times as long as that upon "Ethyl Bromide." We have to differ with the author in the article on ethyl bromide in his statement that "hydrobromic ether affects the human system similarly to chloroform." This is certainly not our conception of this anesthetic; and when it is stated that ethyl bromide is given similarly to chloroform, it becomes manifest that the writer does not speak from personal experience, for while chloroform is to be given well diluted with air, those who have used bromide of ethyl know full well that it must be given in concentrated vapor with the least possible air, and if this is not done it will not act satisfactorily as an anesthetic. The articles which are contributed on medicinal springs by Dr. Crook seem to us unusually interesting and accurate. We cannot agree with the statement in the article on hypodermic medication that nitroglycerin is "a diffusible cardiac stimulant." So far as we know, there is no evidence which can be adduced in support of this assertion. But after all, these minor criticisms in no way interfere with the great value of the book to the physician who wishes not only a complete commentary upon medicine but one which will give him practical information in regard to diagnosis and therapeutic procedure.

INTERNATIONAL CLINICS. A Quarterly Review of Clinical Lectures and Especially Prepared Articles. Volume IV, 1902.

Philadelphia: The J. B. Lippincott Company.

The opening article in this volume of International Clinics is by Dr. Jacobi upon "Strychnine." We are glad to see that he emphasizes the fact that it cannot be used as a substitute for digitalis. The article following is one by Horatio C. Wood, Jr., upon "A Description of the Methods of Investigating the Action of Drugs," which is continued from an earlier volume, and which is to be continued in still another. Among other articles which seem to us of particular interest is one by Dr. Mitchell Bruce, of London, upon "Prognosis in Chronic Valvular Diseases of the Heart." Some of the illustrations, as, for example, those of deformities in children, which are evidently made from crayon drawings, do not seem to us to be very suitable for a work of this character, although the skilful hand of Dr. Taylor shows itself in the outlines which he has made. The book is as well printed as its predecessors, and those who wish to read an assortment of useful clinics given in various hospitals in this country and England will find such in its pages.

THE POCKET GRAY: OR AN ANATOMICAL VADE-MECUM. By the late Edward Cotterell, F.R.C.S. Fifth Edition, Revised and Edited by C. H. Fagge, M.B., F.S., F.R.C.S.

New York: William Wood & Co., 1901.

This duodecimo volume of 250 pages may be called Gray's Anatomy boiled down to the greatest possible concentration. It certainly is not sufficiently thorough or complete to enable the student to employ it in place of the true Gray's Anatomy, although it may be well used by him as a testing-table with which to try his anatomical knowledge at various times during his college course. The only thing that strikes us as being noteworthy in the volume is that so much information could have been printed in so small a space.

OUTLINES OF ANATOMY. A Guide to Medical Study of the Human Body in the Dissecting Room. By Edmund W. Holmes, A.B., M.D. Second Edition.

Lancaster, Pa.: The New Era Printing Co., 1902.

This is really a very cleverly arranged little volume of considerably less than two hundred pages, designed to carry the student through his dissections from day to day. Thus, on the first day, he begins with a dissection of the upper extremity, and proceeds with this until he has carefully dissected the part, when, on the twenty-second day, he proceeds to a dissection of the lower extremity. From time to time memorizing tables are introduced in the text, and we can readily understand how such a little book can become popular, particularly with first-year dissectors.

A COMPEND OF GENERAL PATHOLOGY. By A. E. Thayer, M.D.

Philadelphia: P. Blakiston's Son & Co., 1902.

This is one of Blakiston's well known quiz-compends which have for so many years been employed by medical students as an aid to the acquirement of necessary knowledge in the medical curriculum. There are so many excellent small books upon pathology which are more thorough than this one that we have some hesitation in recommending it, the more so as the illustrations do not seem to be as good as they should be; nor does the text strike us as being as complete as is necessary in a summarizing work of this character. In so brief a space it does not seem wise to utilize pages, as is done in the introductory portion of the work, in the description of monsters.

DIE VERDAULICHKEIT DER NAHRUNGS-UND-GENUSSMITTEL AUF GRUND MIKROSKOPISCHER UNTERSUCHUNGEN DER FAECES. (The Digestibility of Foods, as Determined by Microscopic Investigation of the Feces.) By F. Schilling, M. D.

Leipzig: H. Hartung & Sohn, 1901.

One of the strong tendencies in recent years is for specialism to go mad, and this tendency has scarcely been more prominently exhibited in any volume, large or small, than in this monograph of 128 pages. After unfavorably criticizing the ordinary methods of determining the digestibility of foods and demonstrating to his own satisfaction that exact chemical methods of determining the degree of absorption are practically valueless, the author turns to microscopic methods. He particularly regrets the fact that microscopic botany is not carefully studied by physicians, and pathetically states that he has found gluten cells described as starch cells in a text-book on diseases of the stomach. He then recommends one to examine microscopically, both fresh and cooked, all the vegetables which appear on the table throughout a year! This, he says, will greatly lighten one's labors in examining the feces. He next

gives details descriptive of the appearance of the remnants of vegetables of all kinds in the feces; describes the characteristic appearances of the remnants of meat of various sorts; even gives pictures of the remnants which are characteristic of boiled and of poached eggs; and states that one will also be able to determine whether the patient has been eating goose, duck, chicken, or other fowl, by finding small particles of feathers of characteristic kinds. These are but a few of the details which are gone into at length. After reading over the monograph, one wonders whether any one else can make such fine distinctions, and what the usefulness of the whole thing is, after all. The chief conclusions to which the author comes are that the digestibility of foods has nothing to do with their attractiveness, and that all those forms of food which are not soluble in water or in the digestive juices leave greater or smaller masses of remnants behind. We knew these things before, and there are more practical methods of examination of the feces than those described in this book. D. E.

A Handbook of Bacteriological Diagnosis for Practitioners. Including Instructions in the Clinical Examination of the Blood. By W. D'Este Emery, M.D., B.Sc. Lond., Lecturer on Pathology and Bacteriology in the University of Birmingham.

Philadelphia: P. Blakiston's Son & Co., 1902.

Little books, unfortunately, are very likely to be pernicious; but it is a satisfaction to find a volume of only 207 small pages, in which there is hardly a wasted word, and in which all that is said is of interest to the class of persons for whom the work is intended. The scope of the book is modest, as it includes only bacteriological diagnosis in diseases which are often met with, the bacteriological examination of exudates and pus, the bacteriological examination of the blood, the counting of the blood-corpuscles, the determination of the hemoglobin, the preparation of blood-films, and a description of the preparation of microscopical sections, but the author has followed his purpose admirably. He gives in each case a very concise but perfectly adequate statement of the materials which one needs to have at hand when carrying out the examination described. He then gives, in just as concise a form, a description of the process of making the examination, always mentioning the details which are likely to be troublesome to the inexperienced; and very wisely, whenever this is suitable, he makes a few remarks upon the conclusions that may be drawn from the results of the examination. There are excellent colored plates showing the appearances of stained preparations of the common bacteria, and also illustrations of almost all the different forms of apparatus required. Many useful hints as to inexpensive ways of carrying out bacteriological methods are given, and nothing is discussed that it is not possible for the clinician to learn to do without aid and without a great deal of expensive apparatus. The only points which are subject to unfavorable criticism are the fact that the only hemoglobinometers mentioned are Gowers's and Oliver's, while Reicher's is most commonly used in this country; and that, while the method of preparing stained blood-films is given, nothing is said about the actual appearances of the preparations themselves. The former omission is, however, justifiable, since it follows the methods common in Great Britain; and the latter is evidently due to the fact that the volume would have been considerably enlarged if any discussion of the morphology of the blood had been introduced.

D. E.

Hygiene und Diätetik des Magens (Hygiene and Dietetics of the Stomach); Hygiene und Diätetik des Darmes (Hygiene and Dietetics of the Intestines.) By F. Schilling, M.D.

Leipzig: H. Hartung und Sohn, 1901.

These two little monographs, the first of 130 and the second of 148 pages, are apparently intended to furnish in brief space all the facts that are of marked importance to the general practitioner concerning gastric and intestinal diseases. They demonstrate the fact that the author is well read in his special work and has had considerable experience in the management of this kind of diseases. They both suffer, however, from a lack of sense of proportion; for in monographs of the space noted it is hardly possible to introduce, even briefly, discussions of the anatomy and physiology of the stomach and intestines, to give a general description of special means of diagnosis and treatment and a brief discussion of the etiology, symptomatology, and diagnosis of each disease, without overloading the space at one's command and interfering with clearness. The author has made the mistake of introducing everything that his space

would allow, and many of these things have nothing directly to do with hygiene and dietetics; indeed, a considerable number of them are often taken for granted by those who write much larger works. As a result, there is little individuality in the monographs, and they both impress one as being composite pictures of the views of others, without any clear philosophical discussion of the question at hand. They are nevertheless, as stated, up to date; and if one has sufficient knowledge or perception to choose what is useful to him, they furnish in small space a good deal of information, most of which is generally recognized as being authoritative.

D. E.

A Manual of Ophthalmoscopy. For Students and General Practitioners. By J. E. Jennings, M.D. Illustrated.

Philadelphia: P. Blakiston's Son & Co., 1902.

This attractive little book presents a careful and thorough *résumé* of the elementary principles of ophthalmoscopy, and good descriptions of the diseases commonly met with in ophthalmoscopic examinations. The teaching is clearly expressed and the more easily remembered possibly because the author has chosen impressive rather than classical English. One unfamiliar with the appearances of fundus diseases might readily become confused by some of the illustrations. For example, on page 56 are two representations of the choroid, the first the ophthalmoscopic, and the second presumably the microscopic, since no ophthalmoscope could show the magnification here pictured. But the reviewer has no wish to magnify small defects or to say a word that might detract from the merits of the book. On the contrary, he takes pleasure, after conscientiously calling attention to one or two imperfections, in heartily recommending it to the student as a practical introduction to the larger works.

H. F. H.

Correspondence.

LONDON LETTER.

By Raymond Crawfurd, M.A., M.D. Oxon., F.R.C.P. Lond.

At present there is not much diminution in the incidence of smallpox to notify. It is, however, satisfactory to find that the centrifugal tendency persists, and London in its central parts has now remained practically free for some months. Those who intend to visit London for the coronation festivities in the course of the next two months need have no apprehension, as there are no cases at all occurring in the residential districts, and the degree of epidemicity may be calculated from the fact that out of a population of more than six millions the number now under treatment is under 1500; this figure is chiefly maintained by the neglect of vaccination among the destitute aliens in the outlying suburbs of the metropolis.

There have been several interesting meetings of the various medical societies in the course of the last month, notably one of the Pathological Society, at which Mr. Waring and Dr. Andrewes detailed a new method of extraction of tetanus toxin from some of the solid viscera of the human body by means of glycerin. To the former belongs the credit of initiating the new method, while the latter has done much valuable independent work to confirm its accuracy. Waring gave the technique of his procedure as follows: As soon as convenient after death, the viscera for investigation are removed from the body, and as much blood as possible squeezed out of them by pressure. The material is then cut into small pieces either with a knife or a mincing machine. It is then weighed and mixed with an equal quantity of pure glycerin in a closely-stoppered glass jar. The mincing and mixing with glycerin should, if possible, be carried out in a dark room, as direct sunlight quickly destroys the activity of the toxin. The jar is then placed in a cool, dark cupboard and left there for three or four days; it should be occasionally shaken so as to facilitate the admixture of the glycerin. The mixture is then filtered through glass wool so as to separate the glycerin extract from the insoluble débris.

In his experiments Waring used the liver, while Andrewes prepared his extract from the spleen. In five cases of acute traumatic tetanus Waring, and in one Andrewes, had prepared a glycerin extract by this method and injected it into mice, with the result that mouse tetanus ensued in each case. A remarkable feature, however, in all the experiments was the absence of the usual incubation period. In connection with this point it will be well to note the exact time relations

noted by Andrewes. A mouse which received two-thirds cubic centimeter of the glycerin extract died with typical tetanus convulsions in half an hour. A second mouse, which received a much smaller dose, developed the tonic spasm of the tail, but recovered; but with a further injection of half a cubic centimeter of the extract, it developed typical tetanus, and was killed with chloroform. On the next day a mixture was made of one part of antitetanus serum of unstated strength with two parts of the glycerin extract, and one cubic centimeter injected into a mouse. In forty-five minutes it developed a little stiffness of one hind leg, which was more marked after two hours; this mouse died quietly in a little over four hours with nothing more convulsive than a little twitching of the head. Another control mouse was injected with one-half cubic centimeter of the extract—*i. e.,* a smaller dose and without any antitetanus serum; this mouse developed severe tetanic convulsions in fifteen minutes and was killed by chloroform. The difference of symptoms in the two cases would point strongly to the conclusion that the condition produced was genuine tetanus. Moreover, the glycerin extract retained its potency only for a short while, and after ten days was found to be quite inert, a fact that indicates the presence of a highly unstable poison. Both Andrewes and Waring hold that the only probable explanation of the absence of the incubation period is that the substance formed by the tetanus bacillus and present in its filtered cultures is not in its crude state the toxin, but its precursor—a toxigen, to coin a word—the incubation period being in part employed in the elaboration of the toxin from its precursor.

Some speakers in the discussion that followed the communications urged that the tetanic symptoms were due either to the glycerin or to certain cadaveric toxins from the dead tissues. This view however is incompatible with the marked antitoxic action of the antitetanic serum.

At the same meeting Mr. Bishop Harman read a communication on the cause and character of the veldt sore which has proved such an annoyance to the troops in South Africa. The sore begins as a blister beside some abrasion of the epidermis, and exudes a serous fluid, but without marked damage to the dermis and without pain or constitutional symptoms. Under the microscope the organism could be seen penetrating the stratum lucidum in advance of the blister formation. The practical question was whether this organism is the staphylococcus pyogenes aureus or a specific microbe. The coccus is .8 micron in diameter, growing in pairs, with signs of capsulation, staining with aniline dyes and by Gram's method, and producing in culture luxuriant yellow colonies and an acid reaction. He had succeeded in producing the lesion on himself by inoculation of the blister fluid, but not on animals. It was urged by some speakers that the peculiar character of the lesion and the growth in culture are not sufficient evidence of a specific organism, inasmuch as staphylococcus pyogenes aureus differs in character considerably according to the soil on which it is grown. It was also suggested that the veldt sore is an aberrant form of impetigo contagiosa.

Mr. Cheatle's report on an examination of the ears of 1000 schoolchildren between the ages of three and sixteen years in one of the Metropolitan Poor Law Schools is a surprising document. The object for which the examination was undertaken was to ascertain what proportion of children suffer from diseases of the ear, in order that attention might, if necessary, be drawn to the subject; and that, as so many of the dangers to life and hearing have their origin in childhood, means might be taken to guard against them during that period of life. From the statistical table he has drawn up it appears that (1) the ears were normal in 432; (2) the external ear was affected in 49; (3) the middle ear was affected in 518; (4) the internal ear was affected in 1; total, 1000.

However, the important question is the deficiency of hearing resulting from the various morbid causes, and it appears that this was more or less defective in 520—that is to say, with one or both ears they were unable to pass a lenient whispered voice test at eighteen feet. Many of these were unnoticed by the teachers, the deficiency only being noticed on examination. The variance with the above table is due to the fact that some, although they had definite signs of old suppuration, were able to pass the test. In view of such figures as these, it is to be hoped that some systematic measures for examining the ears as well as the eyes of schoolchildren will be adopted in this country, as has already been done in some others.

Two interesting communications dealing with malignant endocarditis have recently been brought before the Royal Medico-Chirurgical Society. One, by Drs. Poynton and Paine, aimed at showing that there is a group of cases of malignant endocarditis which is rheumatic in nature. The chief arguments they bring forward for this contention are: first, that clinical experience strongly points to the rheumatic nature of some of these cases of malignant endocarditis; secondly, the probability that some of these are rheumatic is in accord with pathological experience, based on the minute histological examination of cases; thirdly, that the rheumatic nature of some of these cases is in accord with bacteriological experience; for:

1. The authors may fairly claim to have shown in the series of papers they have previously published that a diplococcus is a cause of rheumatic fever.

2. They have isolated a diplococcus in pure culture from these cases of malignant endocarditis, which will reproduce the disease in rabbits.

3. The cultural and morphological characteristics of these two diplococci resemble one another so closely as to lead to the conclusion that they are identical organisms.

4. The diplococcus rheumaticus when passed through a series of rabbits will produce malignant endocarditis, indistinguishable from that produced by the diplococcus isolated from certain cases of malignant endocarditis in man.

5. The diplococcus rheumaticus may produce in a rabbit first a recoverable illness with the manifestations of rheumatic fever, and then on a second inoculation malignant endocarditis.

6. A diplococcus isolated from certain cases of malignant endocarditis in man will produce not only malignant endocarditis in rabbits, but a condition indistinguishable from rheumatic fever.

7. By these diplococci every grade of valvulitis from simple to malignant and from malignant to simple can be produced, as the macroscopic specimens submitted by the authors showed.

It is impossible in the limits of this letter to reproduce the details of evidence on which these conclusions are based; suffice it to say that for the most part they commended themselves to a highly critical audience.

A further communication on the possibility of recovery from the active stage of malignant endocarditis was brought forward by Drs. Ewart and Morley and illustrated by cases and specimens. I will content myself with such therapeutic points as arose in the course of the discussion. In these cases a purely antirheumatic and restorative treatment failed to stop the downward progress, and antistreptococcus serum had no influence upon the clinical symptoms, except in one case, in which definite depression was induced by the injections, and the amount had to be reduced. But in two of the cases improvement occurred very soon after protargol inunctions were adopted as an adjunct to previous treatment, and as the improvement continued when the injections were left off, this may be definitely accredited to the inunction. The ointment employed consisted of 20-per-cent protargol in lanolin and lard, about one drachm being used at each daily inunction. Ewart considered that intravenous injections of protargol deserved a trial, considering the apparent benefit from intravenous injection in acute pneumonia, in phthisis, and more recently in anthrax in cattle, and the fact that this method of administration is free from serious risk.

The sketch programme of the annual meeting of the British Medical Association is just issued. The meeting will be held at Manchester from July 29 to August 1 inclusive. Two of the most interesting discussions are likely to be that opened by Professor Clifford Allbutt on "The Causes, Diagnosis, and Principles of Treatment of Dilatation of the Stomach," and that by Dr. Buzzard on "The Differential Diagnosis of Functional and Organic Paralysis." More space than formerly is to be given to demonstrations of clinical apparatus and methods of research, for which provincial practitioners who have little chance of refreshing their knowledge of clinical and pathological technique will be devoutly grateful.

PARIS LETTER.

By R. H. Turner, M.D. (Paris).

Recent experiments made by Hallion and Carrion have shown that brewers' yeast has a peculiar action on diphtheria. There is a special neutralizing effect on the toxin, and

moreover, when taken internally, brewers' yeast remains active even when there is hyperacidity of the gastric juice. These results show that it would seem to be well to apply brewers' yeast on the membranes of diphtheria. The absorption of this preparation acts in a twofold manner: it prevents the multiplication of ordinary germs, and it destroys the toxins produced. Its efficacy in carbuncles and boils is due without doubt to its special action on intestinal fermentation.

Dr. Rosenthal has recently recommended a new formula for the hypodermic injection of digitalin. It is known that most solutions cause pain when injected, and abscesses may take place. This preparation of digitalin is a solution of digitalin of Nativelle in oil, and has so far given very good results.

At a recent meeting of the Obstetrical Society, Dr. Perret described the methods used at the Clinique Tarnier in cases of puerperal infection. The antiseptics used are corrosive sublimate, iodine, permanganate of potassium, oxygenated water, and borax. The local treatment consists in "ecouvillonnage" done after the first symptom of infection, and repeated if need be, and frequent and abundant intra-uterine injections, to be continued several days until the temperature becomes normal. Dr. Forbier presented a "couveuse" heated by electrical lamps. The heat is graduated by a thermometer which cuts off the current at a certain temperature. Dr. Cheron spoke of six cases of puerperal infection, which were treated by injections of turpentine, destined to produce abscesses. In three cases there were no results, and the patients died. In three others abscesses formed, and the patients recovered.

At the medical congress held at Toulouse last month a case of myxedema treated by opotherapy and ending fatally was reported by Dr. Cany. Some tabloids of thyroid extract had been given to a child eighteen months old who showed symptoms of this disease. After two periods of medication, pathological symptoms affecting the kidneys and heart were observed. The child died, however, of bronchopneumonia, and it was found that the cardiac symptoms were due to a fetal malformation. The renal state was of slight importance. Dr. Arnozau, the Professor of Therapeutics at Bordeaux, has recommended great prudence in the use of this drug when applied to children.

The treatment of locomotor ataxia by antisyphilitics was discussed by Drs. Leredde, Cassaet, Pitres, and Lemoine. Dr. Leredde declared that paresis and tabes were found in other cases besides syphilis. Dr. Fournier had said in 1880 that these affections were syphilitic, whereas in 1894 he said their origin was not syphilitic, and he considered it well to call them parasyphilitic. Dr. Leredde thought this term a wrong one, and added that these affections can be cured by the antisyphilitic treatment, provided the latter is begun in time and is carried out energetically. Dr. Cassaet agreed with Dr. Leredde's statements, and said that the treatment should be thorough. He spoke of two patients, one a civil engineer and the other a merchant, who had been so improved by the treatment that they were able to carry on their occupations. Such exceptions will become the rule when the treatment has been more radically carried out. Dr. Pitres, the celebrated neurologist of Bordeaux, said that out of 150 cases of tabes he had seen, 87 were over fifty years old. Of those who were fifty years old, about eighty per cent were syphilitic; of those who were fifty to seventy years old, only forty-eight per cent were syphilitic; and as for the patients over seventy, only a third were found to have suffered from syphilis. Dr. Lemoine, of Lille, in the treatment of tabes gives 4 to 5 centigrammes of benzoate of mercury every day. He obtained in this manner three cures in three cases of progressive general paralysis. As for tabes, he has found that the pains disappear after the twenty-fifth or twenty-sixth injection. A pupil of Dr. Lemoine used a more energetic treatment: 8 centigrammes of benzoate of mercury was injected daily during fifty-four days, without any subsequent accident. The pains disappeared on the twenty-fifth day, and the motor symptoms on the fortieth day.

At a meeting of the Obstetrical Society, held last month, Dr. Treub made some remarks about therapeutic abortion. A woman suffering from incessant vomiting would not let herself be operated on, and died subsequently. It would seem that her confessor would not give his permission. Dr. Treub asked several bishops their opinion on the case, and was told that the Holy Office forbade this operation, even when the patient was in danger of death. Dr. Bar spoke of a case where the priest of St. Augustine's, a fashionable church in Paris, gave his permission.